

DECEMBER 1950

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CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

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198 articles

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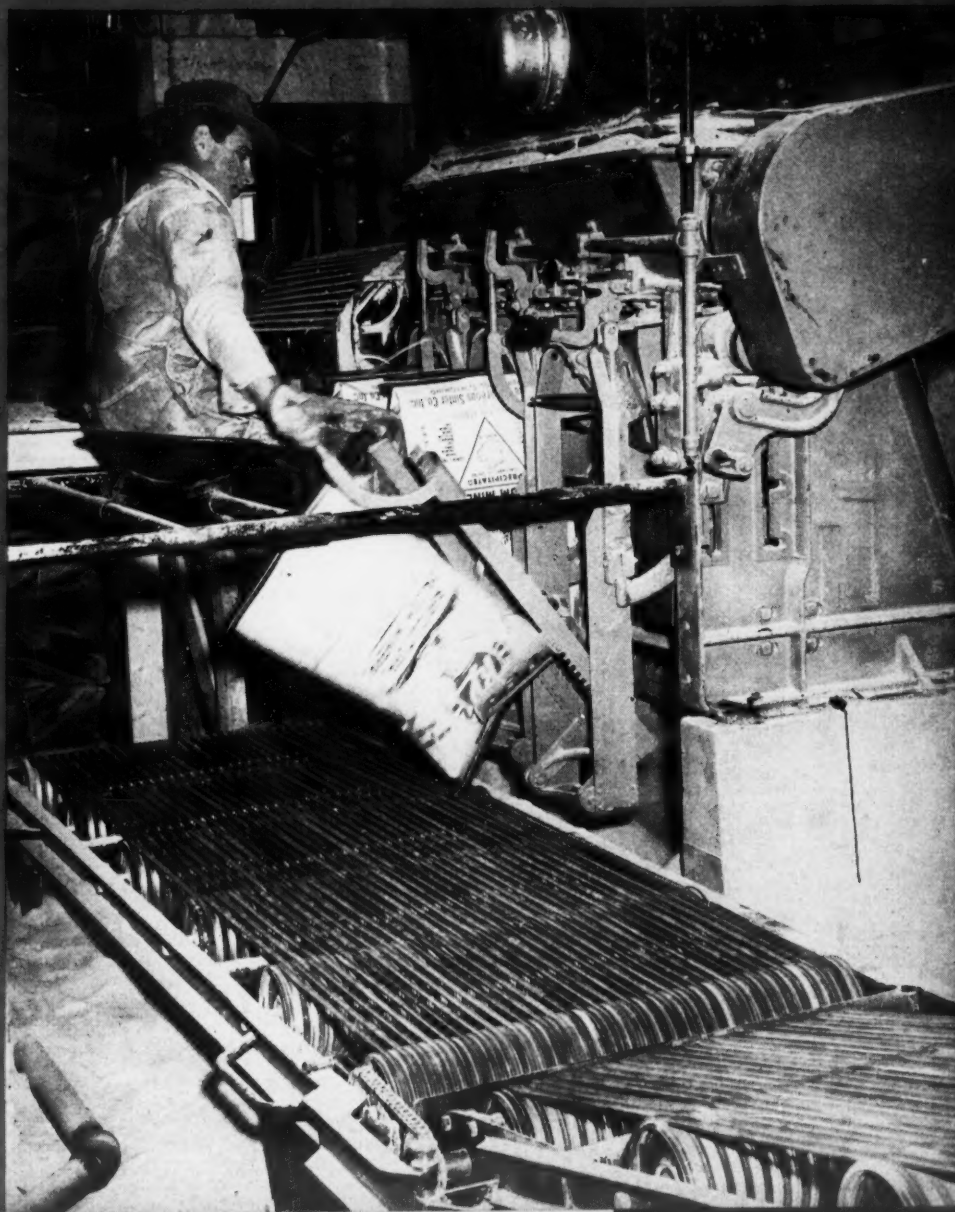
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Conveyor fits under bag
packer with only 7 inch
clearance. Action of end-
less spring belts is self-
cleaning and distributes
material in bag evenly,
making a flatter bag that
handles easily .. Page 34

PUTMAN PUBLISHING CO., CHICAGO

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How Can You Benefit From This

Versatile Catalyst?

BF_3

Boron Fluoride

ETHER COMPLEX, PHENOL COMPLEX OR COMPRESSED GAS



UNUSUALLY VERSATILE Boron Fluoride offers important advantages for a wide range of reactions. Some of these are listed at right. Such benefits merit thorough investigation in any operation where the catalytic properties of BF_3 can be utilized. They may mean increased economy and efficiency in your process too! Further information helpful in evaluating BF_3 for your needs is available from any B&A office.

AS A PIONEER in the field of fluorine compounds, Baker & Adamson introduced BF_3 Etherate to industry a number of years ago. Today it also offers the Compressed Gas and Phenol Complex in commercial quantities. In addition, extensive production and research facilities place B&A in a preferred position to work with you in development of other BF_3 complexes to meet individual specifications.

SOME ADVANTAGES BF_3 OFFERS IN PROCESS USE:

- Operating temperature ranges are wider.
- Yields are increased.
- Separations are easier and no bulky sludges are formed.
- Properties of end-products are improved.
- More reactions are carried to completion.
- Fewer undesirable waste materials result.
- Smaller quantities have greater catalytic activity.
- Little or no extraneous material is introduced into the system.
- Reactions are moderated or more easily controlled.

USES OF BORON FLUORIDE AS A CATALYST

1. Polymerization and co-polymerization of mixed unsaturates.
2. Selective esterification of mixtures of organic acids.
3. Cyclization of synthetic and natural elastomers after polymerization or in starting from monomers.
4. Condensation of modified phenolics.
5. Preparation of alkyl phenols.
6. Refining of aromatic and paraffinic solvents by polymerization of the olefins they contain.
7. Modification of mixtures of esters and acids by polymerizing conjugated compounds selectively.

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SETTING THE PACE IN CHEMICAL PURITY SINCE 1882

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"That's Interesting"

Junior's frustrated: can't carve initials in plastic school desk

Psychologists fearful of thwarting Junior's sprouting personality had better start worrying. Desk tops that defy doodling, carving and ink stains are being installed in the new Wilmette Public School, on Chicago's fashionable north shore.

Supplied by H. R. Winton, Chicago, the desks are covered with Fibersin — tough, durable, resistant laminates, surfaced with melamine resin produced by American Cyanamid Company. Be-



sides being resistant to chipping, peeling, burning cigarettes, heat, water, alcohol, fruit juices, nail polish and everyday abuse, the simulated wood grain effect of such surfacing is said to provide the required light reflection and color tone to minimize eye strain. It requires no refurbishing and almost no maintenance. Because of the strength of its resin wood core, which can be shaped and finished in the same manner as better grades of hard wood lumber, it can be edge-finished without use of metal molding or attached wood edges. Ink, pencil marks, etc., can be wiped off with a damp cloth. (American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.)

"Hams" should use "harmonikers"

Interference with television by amateur radio stations, which appears as a herring-bone pattern on the viewing screen, can be suppressed by a simple instrument called a "harmoniker" that the radio operator can build and put in his circuit to dampen frequency harmonics.

Study fats and oils market

The Production and Marketing Administration of the U. S. Department of Agriculture has announced that a private industrial consultant will, under contract, study existing and potential market outlets for fats and oils of domestic agricultural origin. Major emphasis of the study will be on inedible fats and oils.

Representatives of business firms will be interviewed and marketing trends in production and distribution will be evaluated.

Immediate purpose of the project is to furnish producers, processors and users of fatty acids and synthetic detergents made from inedible fats and oils with information on uses and potential uses of the products. Reports will include data on price relationships between inedible fats and competitive materials, and market relationships between products made from fats and those made from competitive materials.

Foreign benzol and alcohol for butadiene plants

Purchase of benzol and industrial alcohol from foreign sources is being considered by the Government to augment domestic supplies. These materials are requirements of the synthetic rubber program. France is said to have considerable supplies of both these items. About 10,000,000 or 12,000,000 gallons of alcohol are said to be available. Some 10,000,000 gallons have already been contracted for and will be used in the two butadiene plants that the Government recently reactivated.



As you read this issue, if you want more information on processes, controls or developments of products discussed herein . . .

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2269	Metallizing	2317a	Drying Problems Bulletin 361	2371	Laboratory Distilling Apparatus	2419c	Ball Mills
2270a	Portable Mixers	2317b	Drying Systems Bulletin 342	2372a	Lab Jaw Crushers	2420a	2,4-D Solublizer
2270b	Fixed-mounting Mixers	2318	Needle Valves			2420b	2,4,5-T Solublizer
2271	Water Clarifier	2319	Multitail Bags & Closing Machines			2420c	2,4-D Acid Solublizer
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 737 North Michigan Avenue, Chicago 11, Illinois

"That's Inter"

First synthetic rubber
 reactivated, at peak

The first of the country's synthetic rubber plants to be under the expanded production on O. The huge plant, at Port Neches, produce more than 72,000 tons a year when operating at full capacity. Reactivation and modernization accomplished in less than a year at a cost of over \$1,000,000. The United States Rubber Co. reached peak load December 1949. It will mean a boost of 15% in the industry production.

Concrete containing
 gives better protection
 synchrocyclotron rays

A high-water-content concrete containing magnetite ore is reported to give better protection than ordinary concrete in shielding research at the 400,000,000 electron-volt synchrocyclotron at Carnegie Institute of Technology, Pittsburgh.

Dr. Edward Creutz at Carnegie Institute of Technology, Pittsburgh, has tested many types of concrete. He found that type containing magnetite ore is easy to make and handle. And, because of its strength, it occupies less space than ordinary concrete for protection provided.

Salvage valuable oil
 from tank settlements

A process developed by the U. S. Bureau of Mines yields valuable oil from the settlements or waste sludge in petroleum storage tanks. The process recovers up to 18% microcrystalline oil which should be applicable in general to virtually all oil field operations. The process is being used in the petroleum industry to recover oil from barrels of useful product. The method was developed at the U. S. Bureau of Mines, Colorado, Kans. Bulletin 1000, "Resolving Oil-Field Wastes," is available from Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

Furnace uses heat
 from bath of molten

An electric furnace for heating molten glass utilizes heat radiated from a bath of molten glass rather than from burning oil or gas. The glass is any type of scrap, is placed in the bath, and is surrounded by the graphite electrodes. After the bath is molten, it is electrically heated. The current then passes through the electrodes. This process which keeps the bath at a high temperature is maintained. (Ohm's Law) Mfg. Co., Chicago

(Continued)

For more information
 contact at right, specify
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 blank between pages

It's Interesting

rubber plant d, at peak Dec. 1

of the country's all-purpose rubber plants to be reactivated and expanded rubber program production on October 12. This at Port Neches, Texas, will be more than 72,000 long tons a year, operating at peak capacity. and modernization were accomplished in less than three months at a cost of \$1,000,000. Plant operated by the States Rubber Company will be in full load December 1. This will be a boost of 17.5% above current production.

containing magnetite for protection from electron radiation

High-content concrete containing magnetite ore is reported to give better protection than ordinary concrete. Research workers from the University of Pittsburgh are studying the use of 100 electron-volt proton synchrotron at Carnegie Institute of Technology.

Creutz and K. Downs have developed types of concrete and found that concrete containing magnetite ore is easy to mix and handle, quite strong and has the advantage of its superior shielding properties. It takes less space for the amount of shielding provided.

valuable oil, wax settling

Developed by the U. S. Bureau of Mines, this process recovers valuable oil and wax from waste in the bottom storage tanks and in earth-oil. The recovered oil contains 15% paraffin wax. Method applicable in general principles to all oil field emulsions. After the process may enable the industry to recover thousands of useful products and help solve the problem of waste disposal. Developed at pilot plant, El Paso, Bulletin "A Method of Recovering Oil-Field Waste Emulsions" from Superintendent of U. S. Government Printing Office, Washington, D. C.

heat radiated of molten glass

Furnace for heating steel forgings. Heat radiated from a bath of molten glass rather than heat produced by gas. The glass, which can be made of scrap, is first preheated in a bath of graphite electrodes which are electrically conductive. After the glass becomes electrically conductive, and passes through it between two electrodes. This produces a heating effect. The bath is in a molten state at temperatures up to 2700° can be used. (Ohmite News — No. 1, Chicago 44, Ill.)

(Continued on third cover)

For information on product, specify CP 2012. For information request, specify pages 2-3.



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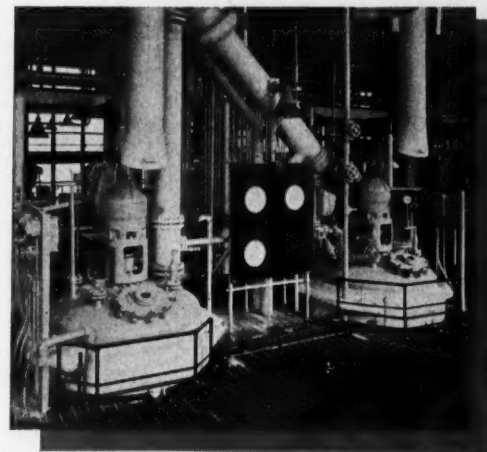
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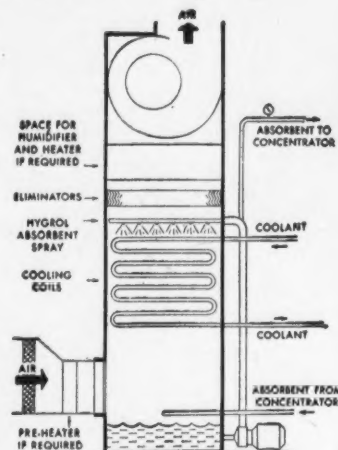
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NIAGARA CONTROLLED HUMIDITY METHOD — FLOW DIAGRAM

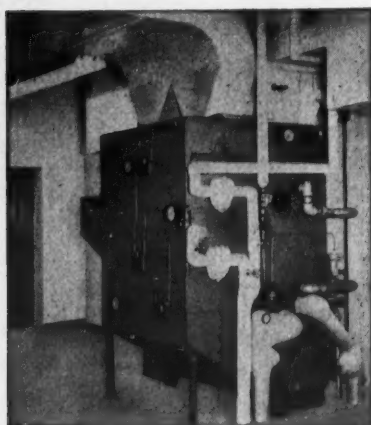
moisture damage to metals, and obtaining better quality for chemical process products and food products—or in obtaining better results in comfort air conditioning for office or laboratory at lower refrigeration costs.

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Are Patent Pools Equitable?

By HENRY H. REICHOLD
Owner and Chairman of the Board, Reichold Chemicals, Inc., Detroit, Michigan



Graduate University of Vienna, College of Chemistry. Held position as Technical Head of Paint Department at Ford Motor Company in 1924. At time synthetic resins were first developed, he founded Reichold Chemicals, Inc. First plant was half a two-car garage, used for storing and distributing synthetics produced in Europe. Leased varnish cooking unit in 1925 for night use in research and development work on synthetic resins and resin base coatings. By 1927, at age of 26 years, he was among those revolutionizing the country's varnish making industry.

LARGE industrial corporations are known to form patent pools and to enter into cross-licensing agreements between themselves. Obviously, such practices must be to the advantage of big business, but what do they do to small businesses which are not in as favorable a position to enter into such agreements? At first glance, it might appear that patent pools and cross-licensing agreements would lead to monopolies in the hands of big business, thereby keeping small businesses out of the running. Actually, the reverse is closer to the truth.

World War II illustrated how much could be accomplished in research by companies working together on their mutual problems. Such developments as radar, the proximity fuse, synthetic rubber, and atomic weapons would not have progressed as they did if each company locked its doors against the other companies working on the same development. Business is realizing more and more that cooperation among companies is to their individual benefit, and also to the benefit of the entire population of the country. Such cooperation has reduced wasteful patent litigation and unnecessary controversy to the minimum, and has given the general public not only economies in cost but also product improvements that might have required years of work if pursued independently by individual companies.

A striking example of how a patent pool can assist small business is found in the automotive industry. When originally organized and put into effect in 1915, the patent pool of the Automobile Manufacturers Association embraced only 547 patents. The largest number embraced at any one time was 1,687 patents in 1930. Yet, as of December 5, 1938, a grand total of 298,000 patents relating to the automotive industry had been granted by the U. S. Patent Office. Approximately only 1/2 of 1 percent of these patents ever found their way into the patent pool of the Association. Thus, it is obvious that a pool, organized on a basis of fair play and without monopolistic taint, does not stifle outside development.

Undoubtedly, many of these patents have improved and refined the art, promoted safety, added to comfort, and have increased the reliability of the "horseless buggy." Some were sold to the manufacturers; others earned substantial royalties under exclusive license. But it is asserted that by far the greatest number supplied the incentive for the founding of numerous, small accessory industries, like the 27,000 Chrysler suppliers which had neither any part in the automotive patent pool nor were hampered thereby.

The chemical industry has heretofore been more or less secretive and self-contained with respect to its patents. Perhaps this is due to the fact that the very nature of the

(Continued on page 48)



BURRELL
FURNACES

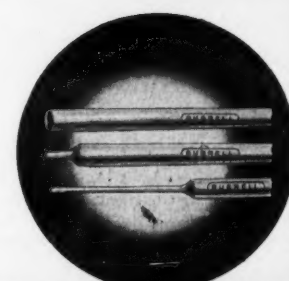
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CHEMICAL PROCESSING

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CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

The News Magazine of Processing
Developments and Control

VOL. 13

DECEMBER, 1950

No. 12

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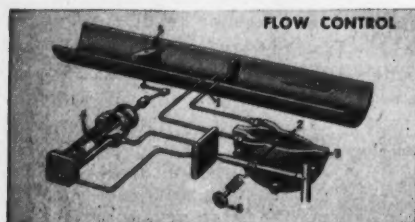


JET PIPE PRINCIPLE

The Askania Jet Pipe amplifies even a minute signal into a powerful movement of a hydraulic cylinder to operate control valves, dampers or other mechanisms.

The Jet Pipe swings freely on a hollow vertical bearing into which oil is supplied. As the oil leaves the nozzle of the Jet Pipe it strikes at two closely adjacent openings in a cylinder block. The Jet Pipe moves right or left with the slightest change of signal, allowing more or less oil to enter the right or left opening.

This in turn, moves the piston to right or left producing proportional cylinder action. As soon as equilibrium is re-established the Jet Pipe returns to its neutral position and the piston stops.



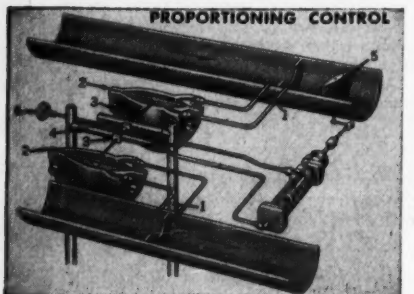
FLOW CONTROL

Differential pressure (1), measured by diaphragm (2). Flow changes deflect Jet Pipe (3), causing proportional cylinder movement (4), and positioning of valve (5). Setting-Dial for desired flow (6).



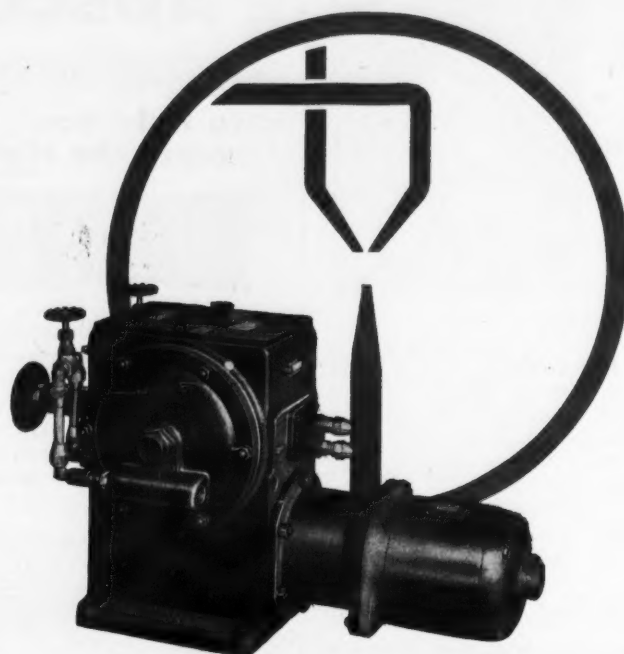
PRESSURE CONTROL

Pressure (1), measured by diaphragm (2). Pressure changes deflect Jet Pipe (3), causing proportional cylinder movement (4), and positioning of valve (5). Setting-Dial for desired pressure (6).



PROPORTIONING CONTROL

Differential pressures (1), measured by individual diaphragms (2). Signal transmitted to opposite sides of Jet Pipe (3). Any unbalance deflects Jet Pipe (4), causing proportional cylinder movement and positioning of valve (5). Setting-Dial for ratio (6).



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The Askania Unit Regulator is the exacting answer to many pressure, flow and proportioning control problems. Its accurate, reliable operation is assured by the highly sensitive Askania Jet Pipe which converts a signal or impulse from the source of measurement into a proportional rate of movement of the piston operating the valve or damper.

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★ Peroxide-bleached Groundwood Bright Enough for Use in Higher Quality Papers . . . Bleaching process aids conservation of diminishing U. S. pulpwood stands because fiber yield of groundwood is nearly twice that of chemical pulp

★ Perfect Blending of Chemicals for Water Treating Compounds with Muller-mixing . . . No major repairs have been necessary in ten years on machine handling 40 to 45 thousand lb per day

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★ Slip-on Covers Protect Contents of Drums and Barrels . . . Neoprene-impregnated kraft paper closures resist water, sunlight, oils, chemicals; are economical

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★ Deionize Small Amounts of Water with Miniature Ion Exchange Unit . . . Device attaches to any faucet; is simple to refill

CHEMICAL PROCESSING

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When inquiring check CP 1018 on handy form, pgs. 2-3

Peroxide-bleached Groundwood Bright Enough for Use in Higher Quality Papers

PROBLEM: Newsprint manufacturers in the U. S. have been in a less-than-favorable competitive position compared to Canadian manufacturers because the last group have lower manufacturing costs, and a more plentiful supply of pulpwood at hand.

As a result, U. S. paper mills were forced to give up newsprint production. They hoped to use groundwood for better types of paper. However, unbleached groundwood, even though it imparts high opacity, good formation, and excellent printing properties to papers, has too low a brightness for use in the higher quality papers. No satisfactory production methods for bleaching groundwood have been known to the pulp and paper industry.

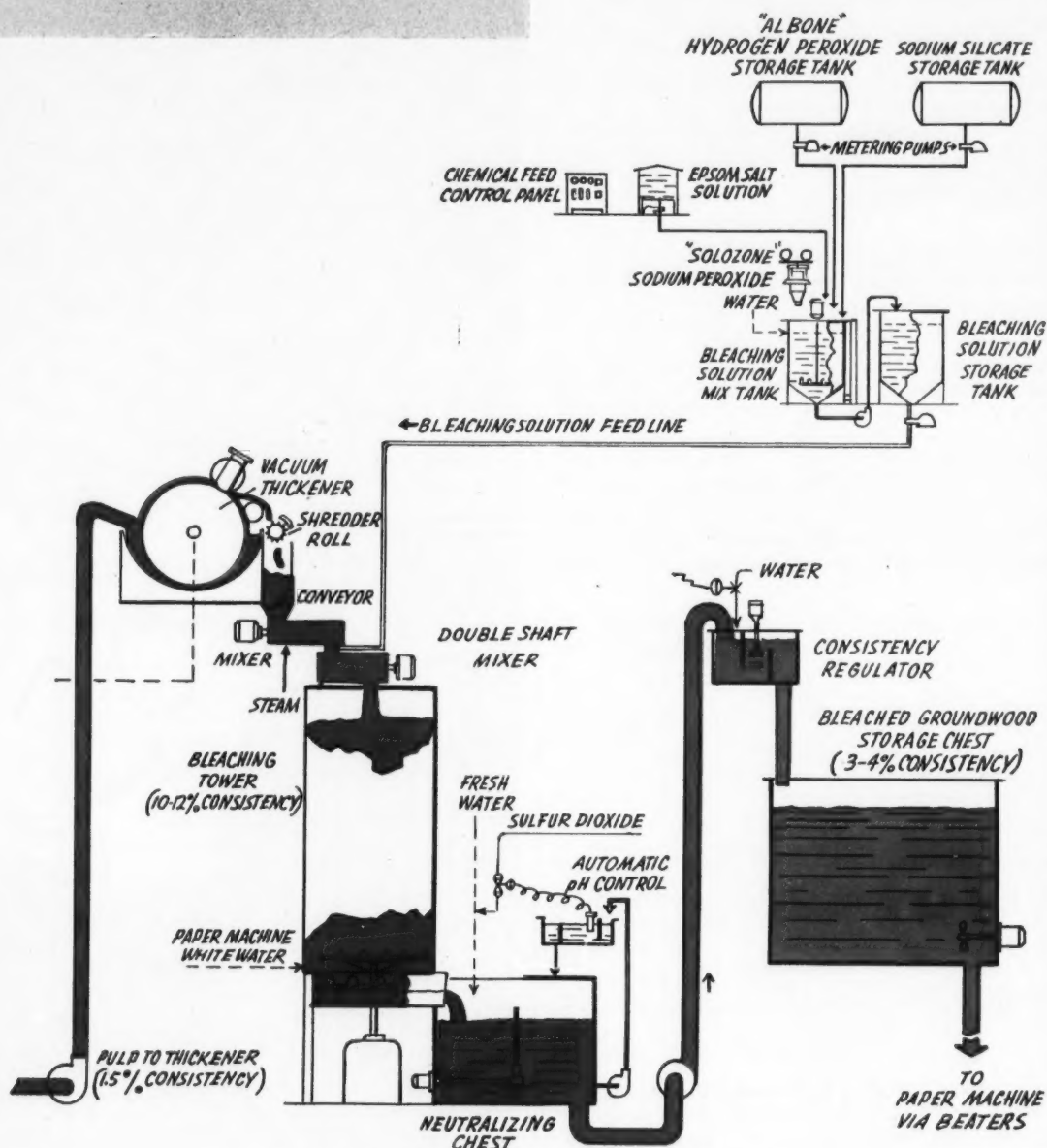
Since the yield of groundwood from pulpwood is 95-99%, as compared to 45-55% for chemical pulps, a suitable process for bleaching groundwood would provide a means for converting pulpwood into paper, with a maximum fiber recovery. This is an important consideration because of the diminishing pulpwood supply in the U. S.

Solution: Although the first extensive mill trial (on production of magazine paper) with bleached groundwood in the furnish was made in 1941, it is only since the end of World War II that a real swing has been made to groundwood bleaching. Twenty-four mills are now using the peroxide process for bleaching groundwood, and many more are planning to adopt it. Peroxide supply is currently delaying some installations.

The bleaching process consists of four basic operations: 1) preparing the bleaching solution; 2) rapid and thorough mixing of the peroxide bleaching solution with the pulp in controlled proportions; 3) retaining the peroxide treated pulp long enough to permit complete bleaching; and 4) reducing and neutralizing the bleached pulp to the pH desired for paper manufacture.



The peroxide bleaching solution is prepared from sodium peroxide and sulfuric acid



System for bleaching a groundwood pulp of medium consistency

Chemicals used in process

These vary with specific choice and demands. They are "Solozone" sodium peroxide or "Albone" hydrogen peroxide, sodium silicate, sulfuric acid or caustic soda, magnesium sulfate, and a reducing and neutralizing agent such as sulfur dioxide, sulfite cooking acid, sodium metabisulfite, sodium bisulfite, or sodium thiosulfate.

"Solozone" is a pale yellow, granular solid containing 96%

Na_2O_2 minimum, and 19.7% active oxygen. "Albone" is a water-white liquid containing either 35% H_2O_2 (16.4% active oxygen) or 50% H_2O_2 (23.5% active O_2) by wt. For groundwood bleaching in general, the alkali content of sodium peroxide exceeds the amount required for best results. In preparing the bleaching solution for these operations, with sodium peroxide as the sole source of active oxygen, the alkali supplied by sodium peroxide must

New Solutions OF PROCESSING PROBLEMS

Bleaching process aids conservation of diminishing U. S. pulpwood stands because fiber yield of groundwood is nearly twice that of chemical pulps

be partly neutralized. This is done most economically with sulfuric acid.

Hydrogen peroxide, on the contrary, is slightly acid in character. Consequently, some caustic soda or other alkali must be used to provide the desired alkalinity when the bleaching solution is prepared with hydrogen peroxide as the sole source of active oxygen.

By using sodium peroxide and hydrogen peroxide in the proper proportions, the use of sulfuric acid and caustic can be eliminated.

Process operation

Bleaching solution is prepared in a dissolving tank equipped for vigorous agitation. The tank is first charged with water and a small amount of magnesium sulfate solution. Then, the required amounts of sodium silicate and sodium or hydrogen peroxide are added. Twenty to forty pounds of sodium peroxide, or its equivalent in hydrogen peroxide, per ton of dry pulp is the usual requirement. After dissolving the peroxide, enough sulfuric acid or caustic soda is added to adjust the solution to the proper alkalinity.

In a medium consistency system (9-15%, based on lb of moisture-free fiber per 100 lb of pulp) the unbleached groundwood is metered to the system at a controlled consistency of about 3%, and is thickened to 9-15% and heated as required. The pulp and peroxide bleaching solution are then thoroughly mixed in controlled proportions, and held in a continuous retention tower or in multiple holding chests where the bleaching reaction goes to completion. Bleached pulp is neutralized and the residual peroxide is reduced with sulfur dioxide, after which it is ready for paper machine furnish.

Several types and arrangements of equipment are used, depending on whether the bleaching is to be carried out at low (4-6%), medium (9-15%) or high (20-35%) consistency.

The flow diagram accompanying this article shows a typical installation for bleaching a medium consistency pulp with "Solozone" sodium peroxide and hydrogen peroxide. Unbleached groundwood from a storage chest is regulated to a consistency of 3% and metered to the seal box where the consistency is adjusted to 1.5 to 2.0%. Then it is fed to vacuum thickener. Thickener delivers the pulp at a consistency of 12 to 15%.

Materials of construction

Stainless steel, tile-lined concrete, rubber-lined steel, and tile are generally applicable. Transite and wood are suitable for some installations. Lead, copper, and iron, particularly the first two, are active catalysts for peroxide decomposition. Iron, however, will give fair performance in contact with peroxide treated pulp while bleaching is in progress if it is coated with silicate or some other corrosion resistant material.

Cypress and yellow pine are satisfactory under some conditions; however, at high temperatures and/or high alkalinities, wood fibers tend to soften and swell, resulting in a short life.

Results: Successful bleaching of groundwood has permitted its use in the manufacture of book, magazine, telephone directory, tissue, towelling, mimeo, tablet, and a number of specialty papers. Bleached groundwood is proving particularly advantageous for manufacture of raw stock for coated papers. It provides a brighter and cleaner base stock for production of coated papers in which good appearance and printability are combined.

Peroxide bleaching of groundwood improves formation of paper on the machine, reduces the dirt count of pulp and improves the absorbency, with a loss of 1% or less in pulp yields. One company reports about a 30% saving in fiber cost when 60% bleached groundwood is used in

(Continued on page 17)



1 CONTROLLED, UNIFORM PRODUCTION OF SO₂

2 COMPLETE COMBUSTION

3 CONTINUOUS OPERATION

An ordinary sulphur burner, which burns solid sulphur on a tray or rotating cylindrical surface, cannot provide a definite, constant burning rate. Since ordinary sulphur contains a small percentage of organic matter, this matter accumulates as a carbonaceous scum on the surface of the burning sulphur, and gradually extinguishes the fire. In order to overcome this factor the Acme Sulphur Burner is operated at a controlled rate sufficient to burn off this scum. Also, in an ordinary burner, the addition of a fresh charge of sulphur to the burning surface disrupts the burning rate for several hours. The Acme Sulphur Burner has a special feeding device that feeds melted sulphur to the burner in a manner that does not disturb the burning surface, at the same time maintaining a constant level of burning sulphur. Thus, uniform production, complete combustion, and continuous operation result.

The Acme Sulphur Burner will operate equally well under pressure or vacuum, and the manufactured gas can be discharged directly to the absorbing apparatus. Efficient operation results either for single burner or battery operation. Where required for large scale production, automatic operating controls can be installed.

—OPERATING PROCEDURE—

Solid sulphur is charged into the hopper of the melting chamber, around which live steam is introduced at about 25 pounds gauge pressure (if steam is not available, an electric heating element is supplied). The melted sulphur is fed to the combustion chamber by means of the feeder, which automatically maintains the correct level. Compressed air, or air furnished by a blower, is used for combustion. The quantity of air supplied regulates the concentration of SO₂ produced. Since the introduction of the feed is below the surface, the burning area is never disturbed. This, together with the unchanging level of molten burning surface, and a controlled air supply, guarantee a constant burning rate and thereby a uniform production of SO₂.



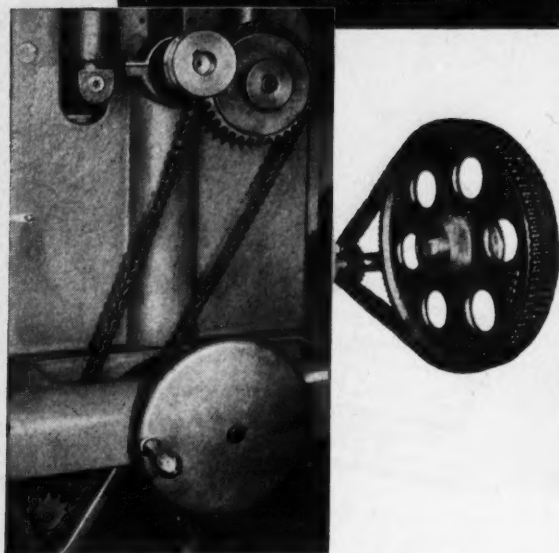
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Processing Equipment

When inquiring check CP 2019 on handy form, pgs. 2-3

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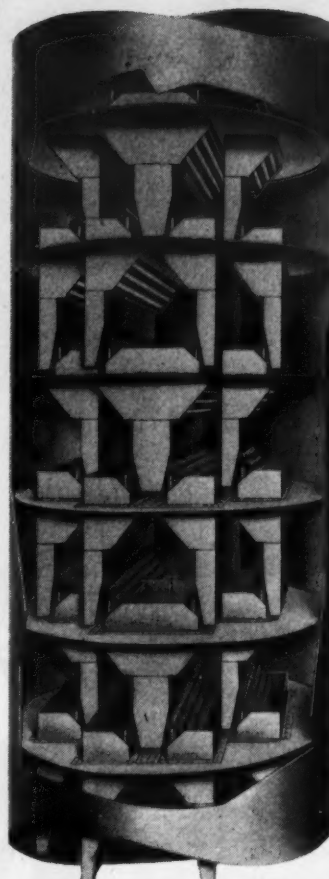
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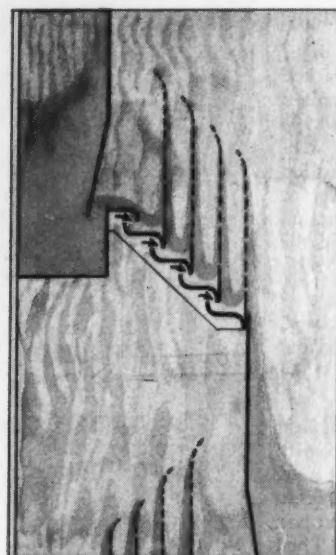


Sectionalized view of tower with Kaskade type trays

Operational principle of a Kaskade tray is revealed here. Colored portions indicate liquid. Arrows denote vapor flow

Gasoline Plant Discovers How to Increase Absorber Capacity More Than 50%

Comparative tests show "Kaskade" tower does not puke at much higher throughput than bubble tray tower; efficiency is better



PROBLEM: The bottleneck in a new plant for recovery of gasoline from natural gas was the bubble tray absorber. When the plant was put on stream about 2½ years ago, the absorber continued to puke (flood) at a rich gas feed of 11,000,000 to 13,000,000 SCFD.

Every effort to increase the throughput without changing the absorber met with failure.

Solution: The company owning the gasoline plant wanted to know if Kaskade trays would provide a better maintained throughput. A capacity rate of 18,000,000 SCFD was guaranteed by the Koch Engineering Company, Inc., and a new Kaskade tower was installed in parallel with the existing 3'-0" diameter bubble tower. Both towers are identical except for the type of trays.

TEST NO. 1 — ALL GAS TO KASKADE TOWER

Time	MCFD		TEMPERATURE — °F				Oil Quantity gpm	Pressure psig	PRESSURE DROP	
	Gas In	Gas Out	Gas In	Gas Out	Oil In	Oil Out			Manometer Inches Hg	Barton Gauge psi
10:00 AM	17,241	14,560	88	102	87	102	113	750	3.9	1.9
									3.25	1.55
									3.85	1.88
11:00 AM	18,345	14,400	88	103	87	103	113	750	3.8	1.8
									4.3	2.5
11:15 AM	16,116	13,350	89	103	87	103	113	750	3.1	1.52
11:30 AM	16,086	13,090	89	103	87	7	113	750	3.85	1.9
11:45 AM	16,868	13,090	90	103	87	105	113	750	2.7	1.4

TEST NO. 2

The tests at 2:45 and 4:00 PM were for bubble tower and Kaskade tower in parallel. To determine loads in either tower divide the quantities by two.

2:45 PM	19,302	15,980	88	103	87	101	113	745	1.65	0.81 Kaskade Tower
									2.0	1.0 Bubble Tower
Heavy rain between 3:00 and 4:00 PM										
4:00 PM	18,880		80	98	85	91	113	750	2.05	1.0 Bubble Tower
									1.60	0.81 Kaskade Tower

TEST NO. 3

The following test was in Kaskade tower only to determine pressure drop at high vapor loads:

5:15 PM	19,642		80	102	87	91	113	750	5.50	2.75
									4.9	2.4
									5.3	2.6
									6.1	2.9
									5.3	2.6

Increased oil rate to 124 gpm but variation in gas loads were too large to detect small change due to increased oil flow.

Before getting into a discussion about test procedure, a brief description of a Kaskade tower is in order. Accompanying drawing is a section of such a tower, and diagram presents a picture of how a tray operates. Liquid enters through a downpour from tray above and is fed into one of the parallel vapor streams rising from tray below. The resulting mixture is thrown violently against a solid plate to which a perforated baffle is attached. Velocity of the mixture creates considerable centrifugal force as the mixture flows along and up baffle. This forces all the liquid and some vapor through the perforations.

Liquid separates from vapor on opposite side of baffle, and feeds into next trough where the operation is repeated. Finally, the liquid drops into downpour leading to tray below. Final separation of vapor from liquid occurs in the downpour. A major portion of the vapor passes upward along near side of the baffle.

The stair-step arrangement of troughs eliminates a liquid gradient across the tray — one of the basic causes of puking in a bubble tower. Moreover, since all liquid passes into each trough successively, all liquid receives the same treatment.

The violence of vapor-liquid mixing causes liquid to be broken up into very fine droplets, so that high efficiencies are obtained. Then too, the perforated baffles provide a large contacting surface. The baffles reduce entrainment.

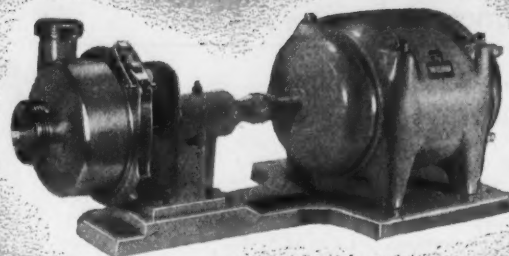
In the tests, lean oil was fed through separate lines. Rich gas was fed to absorbers at about 760 psig. Amount of gas fed to each absorber was regulated by measuring the lean gas from the absorber.

Three tests were made. In the first only the Kaskade tower was involved, appropriate samples being taken to determine efficiency. Pressure drop, pressure, temperatures, and volumes were noted. In the second test, both towers were operated in parallel, oil and gas equally distributed between them. Suitable measurements were made, and samples taken.

For the third test, the bubble tray was shut down, and all the rich gas was turned into the Kaskade tower. The lean oil flow was increased to see how the pressure drop varied. However, the lean oil pumps could not pump enough to overload the tower. Actual superficial velocity in the bubble tower was determined to be 0.4 ft/sec at 13,000,000 SCFD. Tray characteristics of the tower are pretty

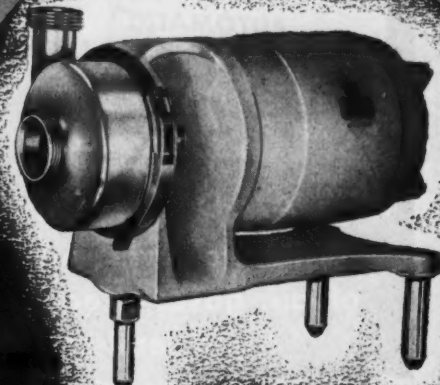
(Continued on next page)

For more information on product at right, specify CP 2021
... see information request blank between pages 2-3.



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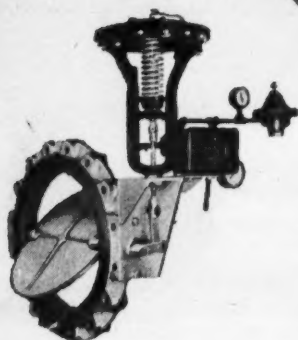
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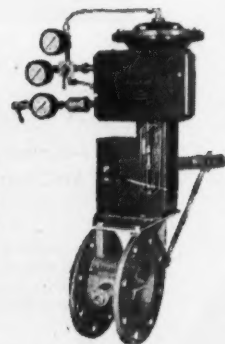
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NEW SOLUTIONS of processing problems

(Continued from preceding page)

standard. Riser area is only about 7.7% of tower area, but at the low gas velocity the riser pressure drop is insignificant.

Runback or blocking of caps seems improbable since there are only 3 rows of caps for liquid to flow over, and the flow nominal. Liquid buildup in downpour does not seem to be the answer to puking in the tower. Downpour area appears to be ample for the liquid velocity involved. There are no support angles or hold-down bars to interfere with liquid and vapor flow.

Pressure drop measurements indicated that there was no restriction in tower.

Results: Test conditions are summarized in accompanying table. Space does not permit the inclusion of analyses of gases and oils fed to and taken from the absorbers.

In general, the gas from the Kaskade tower in the comparison test (Test No. 2) was of a lower density, richer in light ends and leaner in heavy ends than the lean gas from the bubble tray tower. The Kaskade tower was operating at only 50% of its ultimate capacity during the test.

Test No. 3 proved the Kaskade tower capable of handling more than 19,000,000 SCFD without puking. This is compared with the 13,000,000 SCFD that caused puking in the bubble tray tower. In fact, by extrapolating pressure drop data taken by a calibrated Barton gauge in parallel with a mercury manometer, it is conservatively estimated that the Kaskade tray would handle at least 22,000,000 SCFD of rich gas feed, or about 170% of the maximum throughput of the bubble tray.

Kaskade towers are made in a number of sizes. However, due to economic reasons, they are usually not made in diameters less than 16", except for pilot plant work.

Source: Koch Engineering Company, Inc., Dept. CP, 335 W. Lewis St., Wichita, Kansas . . . or for more information check CP 2023 on handy form, pages 2 and 3.

Company gets higher yield of fiber from wood . . .

fiber from three single-disc refiner forms pulp that is comparable to sulfite

Problem: Maizewood Insulation Company, Dubuque, Iowa, wanted a higher yield of fiber from woody materials. This fiber had to bleach and form a pulp comparable to the customary sulfite.

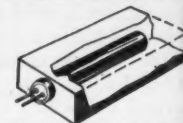
Solution: Three 400-hp Sprout-Waldron refiners are used for disintegration. This single-disc mill is employed on kraft, soda, and sulfite knotted and fine screen rejects; on hogged bull screen rejects; knotted and second screen rejects of raw groundwood; on semi-chemical chips of all kinds; on spent chips after extraction processes; on bagasse, straw, and similar grasses; for breaking down lumps in reclaimed waste paper stock; for refining kraft, sulfite, and soda cooked chemical pulps; and for reduction and refining of rag and other half stocks.

In this type of refiner, one set of plates is fixed to the mill shell, and another set to the rotating disc. Stock is introduced in the center, between the grinding plates, and discharges around the periphery, movement of the stock being effected by the rotating disc.

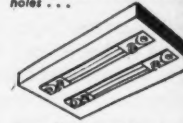
Cutting, rubbing, rolling, etc., as may be required take place between the bars of the plates. These plates

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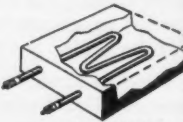
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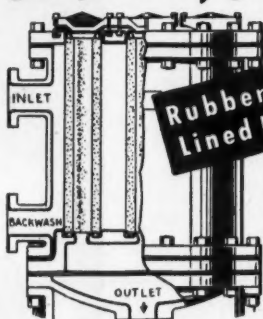
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GENERAL ELECTRIC

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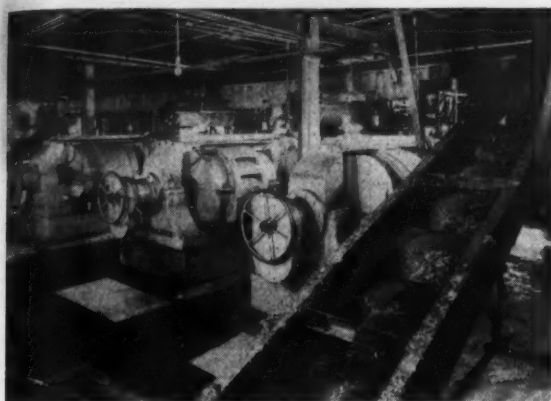
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CHEMICAL PROCESSING



Refiners are in background of this illustration. A constant-speed stock conveyor is shown in foreground

operate at very close tolerances, but need not actually rub or touch, thus assuring long life. They are cast from a hard white iron, Ni-Hard, manganese, or stainless steel.

Stock flows with spiral motion in the groove between adjacent bars or teeth and is caught between opposing bars in its passage through the plates. Patterns are designed so that, for a given problem, the stock does not completely fill up the space between, which would cause it to act similarly to a disc clutch and consume an excessive amount of power. No-load and circulating losses are at a minimum.

Changes in characteristics of the finished pulp are secured through selection of plate design, variation in consistence, and disc settings. The refiner has been designed with a single runner disc so that the plates are always parallel to each other at any operating speed.

Finished stock is thrown out around the entire periphery of the revolving disc where it may be restricted to any desired extent by manipulation of the peripheral control ring operated by a hand-wheel located on the front of the stationary swing head.

For best results, stock is fed at a uniform rate. Chips are of uniform size as far as practicable. Long slivers are first hogged to pass a 1" screen or smaller.

Results: Satisfactory operation is secured over a wide range of consistences. Average practice is to use 4% consistence, but good results have been secured up to 8%; and under favorable conditions higher consistences have been used.

It has been found that minor fluctuations in the rate of feed, within the capacity limits of the machine, do not cause perceptible changes in the pulp quality.

Because of the design of the machine, the pulp has a minimum of "flour" or fines, and is almost free from shives.

Standard construction is used in the refiners at Maize-wood. This type of construction is recommended for the pH range of 5.5 to 9. Semi-acid-resistant construction is recommended for pH of 4.0 to 5.5 and above 9. Fully-acid-resistant construction is recommended for pH below 4.0 or when particularly corrosive conditions are present, such as is found in stock from the Asplund system and steamed chips.

Source: Sprout, Waldron & Co., Inc., Dept. CP, Muncy, Pa. . . . or for more information check CP 2026 on handy form, pages 2 and 3.

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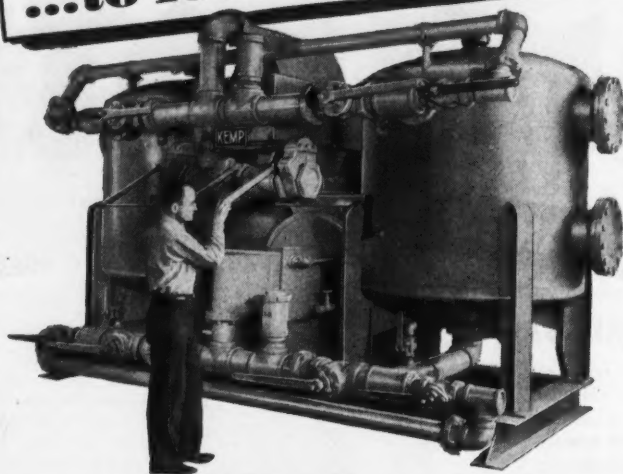
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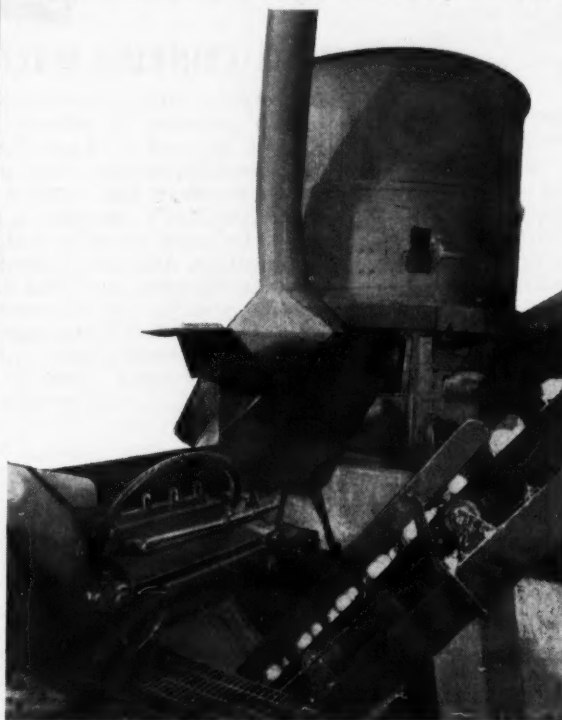
NEW SOLUTIONS of processing problems

Perfect blending of chemicals for water treating compounds with muller-mixer . . .

no major repairs have been necessary in ten years on machine handling 40 to 45 thousand lb per day

Problem: In mixing of soda ash, tannins, vegetable oils and water at the National Aluminate Corp. in Chicago, it was found that ribbon and spiral mixers did not give the perfect blend desired. These compounds are mixed together into a damp, solid blend which is apportioned to other parts of the plant, where other ingredients are added and mixed in to produce various types of water treating chemicals. About 40 to 45 thousand pounds of the "base blend" per day are made.

Solution: After trying other types of mixers unsuccessfully, the company settled on a Mix-Muller type of machine. This unit is rather familiar to industry. It consists of a circular, stationary pan in which



One of the five Mix-Mullers installed at National Aluminate is in background. This unit mixes the "base blend", prepared by a similar mixer, with other ingredients, to make a finished water treating compound. The compound, in this case, is compressed into balls which can be seen on conveyor in foreground. Note hood around mixer for dust suppression

is mounted a special combination of mullers and plows that revolve. The mullers are adjustable and are supported on rocker arms so that they are free to ride on the materials, creating pressure and an intensive rubbing and blending action as they revolve.

After preparation, the material is discharged, by the action of the plows, through a door in the bottom of the pan. Discharge time is usually less than a minute. The 8 ft diameter mixer used for making the "base blend" at National Aluminate has a 30 cu ft capacity and is driven, through gear reduction, by a 50 HP, 1800 rpm motor. Average mix handled is 2400 lb. A powered, bucket type loader is employed for charging the solid materials.

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22

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on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Skilled personnel operate all the mixers in the plant. They are responsible for determination of optimum mixing time for each batch. The operators do this by visual inspection of the material as it is being mulled and mixed.

Results: The mixer gives the desired blend that could not be obtained with the other types of units. The "base blend" mixer has needed no major repairs for ten years, even though it has averaged 250 days per year service during that time. Often, this service has been very severe.

Source: Simpson Mix-Muller Division, National Engineering Co., Dept. CP, 602 Machinery Hall Bldg., Chicago 6, Ill. . . . or for more information check CP 2031 on handy form, pages 2 and 3.

Chlorinator reducers of nickel-base alloy last 8 times longer . . .

old type cost company \$4 per day; new type costs less than 70c per day

Problem: To introduce chlorine gas into a chlorinator at 100°F, a large midwestern chemical company needed reducers that had good mechanical strength and, at the same time, would resist the corrosive effects of wet chlorine. The material they had been using—iron-silicon alloy castings—failed because of poor mechanical strength in only a few weeks.

Solution: Over a year ago, the company installed reducers fabricated from Hastelloy alloy C, a nickel-molybdenum-chromium alloy. Each of the 12 reducers used on the chlorinating tower consists of three parts: two flanges and a body.

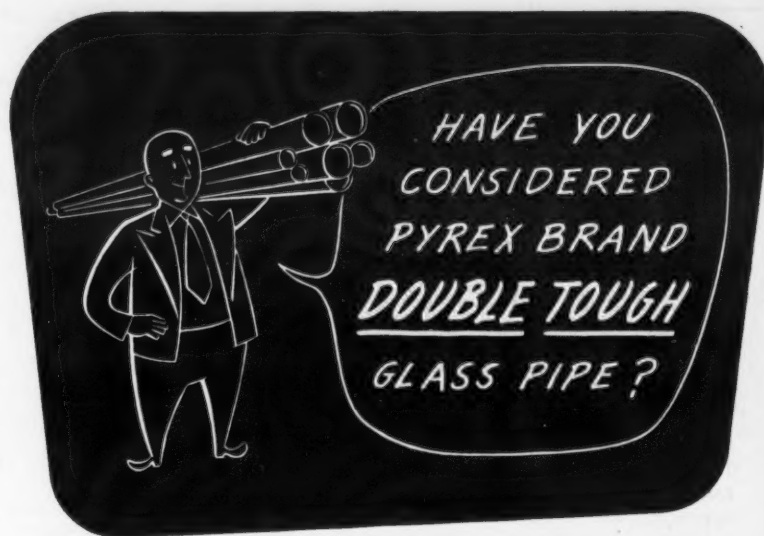
To form the body, 10-gauge sheet was cut to size, rolled into the shape of a cone, and then welded. The top and bottom flanges were circlecut from 12-gauge sheet and then welded to the body. The entire assembly was then solution-treated to restore maximum corrosion resistance to the alloy. All welds were made with a Heliarc torch, using Hastelloy alloy C bare drawn wire.

Results: The Hastelloy alloy reducers are still in service after more than a year's use. This represents about eight times the life that was previously obtained from the iron-silicon alloy castings. Furthermore, the cost of using reducers made of Hastelloy alloy has so far been only about 70 cents a day, based on actual performance records. And, since the reducers are still in service, the final cost figure will be even lower. For the type previously used, it cost the company about four dollars a day.

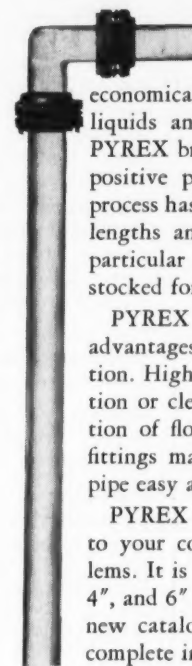
Source: Hastelloy alloy C is one of a series of four nickel-base alloys supplied in all standard and wrought forms by Haynes Stellite Division, Union Carbide and Carbon Corporation, Dept. CP, Kokomo, Ind. . . . or for more information check CP 2032 on handy form, pages 2 and 3.



Nickel-base alloy reducer of the type
being used on chlorinating tank



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More and more, processors and manufacturers are finding PYREX brand glass pipe the practical and economical solution to the problem of transferring corrosive liquids and gases. The reasons aren't hard to find. Made of PYREX brand glass No. 7740, "Double-Tough" pipe gives you positive protection against corrosion. A new heat treating process has greatly increased the strength of the ends of straight lengths and all standard fittings (except U bends). And, of particular importance these days, PYREX brand glass pipe is stocked for prompt shipment.

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When inquiring check CP 2033 on handy form, pgs. 2-3

FOR PRODUCTION . . .
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When inquiring check CP 2035 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

NBS develops new casting resin for potting components of electronic circuits . . .

has low viscosity and coefficient of expansion, good electrical properties; coating uses foreseen

Problem: During development of certain specialized electronic circuit components by the National Bureau of Standards, researchers at the Bureau discovered the need for a potting resin that would possess a combination of electrical and mechanical properties not obtainable in any of the available plastics on the market.

Requirements were very stringent. The physical properties of the electronic components limited the temperature and pressure that could be applied to the resin. Viscosity of the resin could not be so high that the resin did not fill the restricted spaces around the electronic components. The dielectric constant and power factor had to be low over a wide range of frequencies, and the leakage resistance had to be high over a wide range of frequencies.

Then too, the resin had to have approximately the same coefficient of expansion as the components imbedded in it, so the components would not be damaged or disarranged during potting. The amount of shrinkage during polymerization was a prime consideration. Excessive shrinkage could crush the electronic components and tear the wiring loose. Conversely, if the potting material was made sufficiently resilient to avoid the crushing action, the components could pull through the plastic material and break the electrical connections under stress.

High tensile strength was required to prevent the casting from tearing loose from its support, and high compressive strength was needed to protect the blocked unit. In addition, the impact strength had to be high enough to assure full protection to the unit.

Last, but by no means least, it was highly desirable to hold curing time as low as possible to reduce the number of ovens and amount of manufacturing space.

Solution: Several types of synthetic materials that showed possibilities were actually tried, but all had disadvantages that precluded their use.

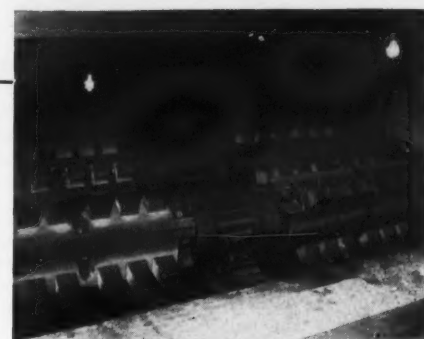
For example, a mixture of styrene, divinylbenzene and polyisobutylene catalyzed with tin tetrachloride was found to be very viscous in monomeric form, and control of this material was too critical for mass production of blocked assemblies—during processing, one lot might polymerize very slowly and unevenly, while the next might char in a few seconds.

The catalysts in the usual phenolic casting resins proved to be so corrosive that the metallic salts formed were sufficient to affect the operation of the unit adversely.

The many polyester and allyl resins considered were unsatisfactory because the loss figures in the radio frequency range were too high for this particular application. The usual low-loss resins such as polystyrene require elevated temperatures to minimize curing.

Eventually, research was devoted to development of a new resin that would satisfy the tough requirements set up for this application. The final result was a resin that contained 33% 2,5-dichlorostyrene, 21% styrene, 13% hydrogenated terphenyl, 0.5% 40-percent divinylbenzene solution, 21.5% poly-2,5-dichlorostyrene and 11% polystyrene (all percentages by weight) and cumene hydroperoxide catalyst.

For large volumes of resin, from 0.05 to 0.1% catalyst



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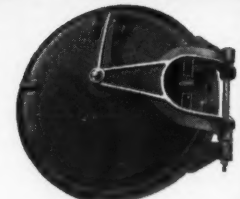
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When inquiring check CP 2036 on handy form, pgs. 2-3

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SPECIAL AUTOCLAVES, high or low pressure, Standardized quick opening doors . . . Rotating Vessels (Internals and openings to your specifications.)



Above—Simplex quick opening doors. Cast Steel Construction assures rigidity and resistance to warpage.

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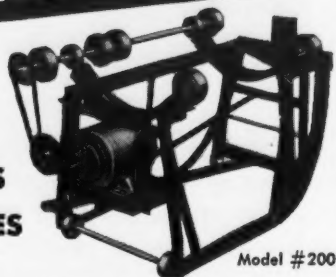
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When inquiring check CP 2037 on handy form, pgs. 2-3

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- MIXES
- CLEANS
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When inquiring check CP 2038 on handy form, pgs. 2-3

NEW TWIN-SHAFT MIXER OFFERS TOP EFFICIENCY

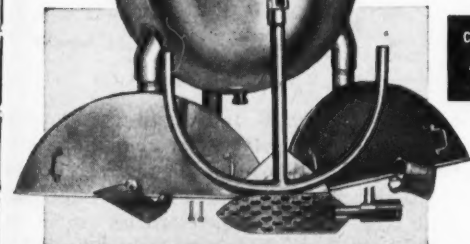
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half a century of fine kettles

When inquiring check CP 2039 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

is used, and the mixture is gelled at room temperature. After gelation, any exposed surface is flooded with glycerol to promote formation of a hard surface. The gelled resin is then placed in an oven at 50 to 60°C and cured overnight. The final casting is stabilized by curing for an additional period of 10 days at the same temperature.

Faster polymerization is obtained by adding 0.05% manganese naphthenate or manganese octoate solution containing 6.0% manganese in the form of the naphthenate or octoate. However, this yellows the resin.

Results: The NBS casting resin comes very close to satisfying the demands required of it for potting the electronic components. Following is a tabulation of typical properties of the resin, cured at 50°C, but containing 0.1% benzoyl peroxide instead of cumene hydroperoxide as catalyst.

Tensile strength, lb/sq in	4,000-4,500
Modulus of elasticity, lb/sq in	440,000
Elongation at break, %	0.9
Compressive strength, lb/sq in	17,100
Izod impact strength, ft-lb/in of notch	0.228
Rockwell hardness, M scale	M76
Rockwell hardness, L scale	L100
Coefficient of thermal expansion per °C	11 x 10 ⁻⁵
Water absorption, 24-hr immersion, %	0.01
Density of monomer, 20°/4°C	1.129
Density of polymer, 20°/4°C	1.220
Volumetric shrinkage on polymerization at 20°C, %	7.5
Heat distortion temperature, °C	68-70
(On being heated 200 hr at 150°C, the resin browned but was not degraded or changed in shape)	
Brittle point, 1-day cure, °C	54
Brittle point, 6-day cure, °C	86
Index of refraction at 25°C, sodium D line	1.608
Dielectric strength, 1/16" sample, volts/mil	610-660
Volumetric resistivity, megohm-cm	10 ¹⁷

This casting resin has been used as a coating material where superior electrical properties and water resistance are required. The resin is catalyzed with 0.1% benzoyl peroxide, and the coated form is baked at 50°C for 12 to 20 hr. The monomers evaporate to some extent, leaving the cross-linked film with a higher proportion of plasticizer than the original resin. Film is flexible, somewhat soft, and adheres to metal.

If the resin is catalyzed with 0.1% *t*-butyl hydroperoxide and 0.05% manganese naphthenate or octoate solution containing 6.0% manganese, the resulting baked film is much harder but is more brittle and has poorer adhesion than when catalyzed with benzoyl peroxide.

Source: More complete information is contained in NBS Circular 493. A copy may be obtained by sending 10c to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

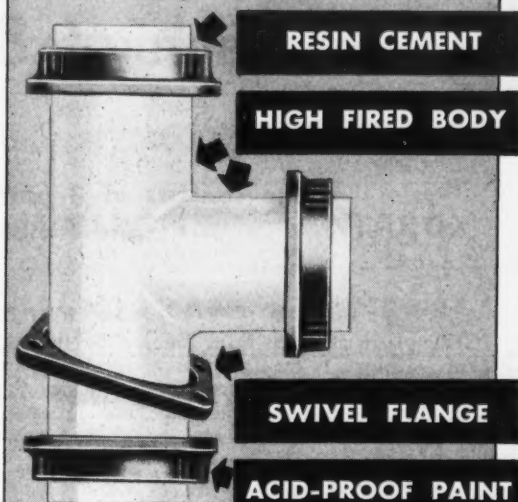
Groundwood Bleaching (Continued from page 9)

the furnish, as compared to using chemical pulps.

Disposal of waste products in groundwood production is a negligible problem as compared to disposal in chemical pulping operations.

Source: "Solozone" and "Albone" are products of the Electrochemical Department, E. I. du Pont de Nemours & Company, Incorporated, Dept. CP, Wilmington 98, Del. . . or for more information check CP 2040 on handy form, pages 2 and 3.

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Our Insulator Division Manufactures Steatites, Porcelains, *Single Source of Supply. Titanates, Ferrites

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When inquiring check CP 2041 on handy form, pgs. 2-3

Drum-color-code Identifies Each of 8 Plasticizers

**Line consists of 3 phthalate, 2 adipate, 2 sebacate
and 1 oleate type materials**

EIGHT plasticizers are being offered by this company. Unique is the fact that a distinctive drum coloring system is being employed for easy identification of each. Brief information on usage and outstanding characteristics are presented here.

Dibutyl Phthalate

Known as Plasticizer PX-104, it may be used for plasticizing nitrocellulose lacquers, polyvinyl chloride coating compositions, phenolic resin laminating varnishes, synthetic rubber compounds, and cellulose ester type molding compounds. Possesses high solvent power for cellulosic products and other synthetic resins. Combines high dilution ratio and good stability.

Di-iso-octyl Phthalate

Plasticizer PX-108 is a primary plasticizer for film, sheeting, dispersions, and extruded stocks of vinyl resins. Stable, it offers good resistance to hydrolysis and to ultraviolet light. Combines low temperature flexibility and good resistance to volatilization.

Dioctyl Phthalate

Used as primary plasticizer in such vinyl resin compositions as supported and unsupported film, wire insulating compounds, and protective coatings. Plasticizer PX-138 imparts good low temperature properties, and is stable against ultraviolet light and high processing temperatures. Changes to a viscous gel at approximately -50°C.

Di-iso-octyl Adipate

Polyvinyl chloride stocks plasticized with Plasticizer PX-208 are suitable for calendaring and extrusion, as well as for the preparation of polyvinyl dispersions. Low water extractability, relatively low volatility, ease of processing are reported. Low temperature flexibility is outstanding. In addition, it has good electrical properties, and good stability to ultraviolet light and to high processing temperatures.

Di-iso-octyl Sebacate

Polyvinyl chloride compounds intended for use at low temperatures are effectively plasticized with Plasticizer PX-408. Also for use in cellulosic plastics and oil-resistant synthetic rubbers. Has the good properties of dibutyl sebacate, but is much less volatile. Slight water solubility, wide compatibility, good heat and light stability, and freedom from objectionable odor are characteristics.

Dibutyl Sebacate

Designated as Plasticizer PX-404, it is useful in vinyl

film, in various oil-resistant rubber compounds, and in several cellulosic derivatives. Promotes vinyl film of good clarity, drape, and resiliency. Possesses good heat and ultraviolet light stability, low water extraction, and good electrical properties. Has good low temperature plasticizing properties.

Dinonyl Adipate

As a relatively new plasticizer, Plasticizer PX-209 has been found very useful in vinyl dispersions of the or-

Offers 3 Plasticizers for Cellulose Plastics and Polyvinyl Chloride Resins

**Impart excellent clarity, light color, high impact strength,
high fold resistance, and good light stability**

USES: Pycal 29 is intended for use with cellulose acetate and other types of cellulose plastics which are used in film and molding applications. Pycal 40 is used for cellulose acetate and nitrocellulose sheets, films and coatings.

Pycal 62, a solid, crystalline material, is a plasticizer for cellulose esters, cellulose ethers and polyvinyl chloride resins. It is recommended for use in heat sensitive adhesives and similar products.

Description: Properties are summarized in Table I, and solubilities are detailed in Table II.

Pycal 29

This material is a mobile liquid. It is compatible with

ganosol and plastisol types because it gives dispersion of low viscosity. Has marked effectiveness as a low temperature plasticizer for vinyl compounds.

Tetrahydrofurfuryl Oleate

Plasticizer PX-658 is an effective secondary plasticizer of the fatty acid type. Gives vinyl extrusion and calendaring compounds with good low temperature flexibility and good hand and drape. Reduces viscosity and improves the flow characteristics of organosols and plastisols.

Technical Bulletins: Data sheets describing the products, listing sales specifications, and giving important commercial information, are available for each product.

Source: Products of the Pittsburgh Coke & Chemical Co., Plasticizer Division, Dept. CP, Grant Bldg., Pittsburgh 19, Pa. . . or for more information check CP 2042 on handy form, pages 2 and 3.

all cellulose esters and ethers, and is said to be superior to diethyl phthalate as a solvent for cellulose acetate and equal to dimethyl phthalate in this respect. Because of this, the plasticizer can be molded at low temperature and in short cycle time. Molded articles are of excellent clarity, light in color, and quite high in impact strength. Dimensional stability is good. Pycal 29 is compatible with the phthalate plasticizers and can be used with them to obtain improved impact strength, the manufacturer emphasizes. Material is reported to have a mild, ether-like odor.

The relatively low specific gravity is of advantage in lowering the cost per unit volume of finished molded plastic.

Pycal 40

Plasticizer is a viscous liquid that is compatible with cellulose esters and ethers, and partially compatible with polyvinyl chloride resins. It is best used with cellulose acetate sheets and films deposited from solvents. Such sheets, containing this plasticizer, have very good fold resistance and good light stability. The very low volatility is of particular advantage in such sheets and films. Pycal 40 is recommended for direct molding applications only in combination with an active solvent plasticizer such as Pycal 29 (see above).

The material can be used as a dibutyl phthalate replacement in nitrocellulose lacquers. Its very low volatility, good light stability and high degree of solvency for nitrocellulose can be put to good advantage in such applications.

Properties and solubilities of plasticizers

TABLE I

Properties of Pycal Plasticizers

	Pycal 29	Pycal 40	Pycal 62
Color	APHA 200 max	APHA 300 max	White solid, pale yellow when melted
Specific Gravity	1.053	1.198	—
Viscosity, cp	27	830	—
Refractive Index	1.512	1.523	—
Acidity as HAc	0.05% max	<0.5%	<0.2%
Initial bp, °C	150 @ 10 mm Hg abs.	220 @ 2 mm Hg abs.	—
Freezing Point, °F	Below -40	App. zero	125-7°C (mp)

TABLE II

Solubilities of Pycal Plasticizers

	Pycal 29	Pycal 40	Pycal 62
Water	*	Ins.	Ins.
Aliphatic Hydrocarbons	Sol.	Ins.	Ins.
Aromatic Hydrocarbons	Sol.	Sol.	Sl. sol.
Ketones	Sol.	Sol.	Sl. sol.
Ethers	Sol.	Sol.	Ins.
Alcohols	Sol.	Sol.	Ins.
Esters, Lower Aliphatic	Sol.	Sol.	Sl. sol.
Vegetable Oils	Sol.	Ins.	Ins.

*1.3% soluble in water @ 25°C; 4.3% water soluble in Pycal 29.

Pycal 62

This solid is somewhat compatible with cellulose esters, cellulose ethers and polyvinyl chloride resins. Its sharp melting point is of advantage in preparing specialty heat sensitive formulations for adhesives and similar products.

Source: All are products of Atlas Industrial Chemicals Department, Atlas Powder Company, Dept. CP, Wilmington 99, Del. . . or for more information check CP 2043 on handy form, pages 2 and 3.

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NOTE: The Dyestuff Division of General Dyestuff Corporation will continue to operate as before, without change in personnel or policy.

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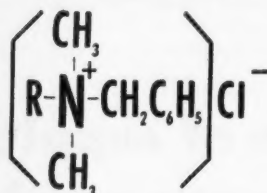
When inquiring check CP 2044 on handy form, pgs. 2-3

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Concentration, pH, Temperature Vary Viscosity of Acrylic Polymer Solutions

Useful for their thickening, suspending, stabilizing and film-forming characteristics

USES: Thickening, suspending, stabilizing, and film-forming characteristics suggest potential applications in the preparation of adhesives, binders, detergents, thickening agents, film formers, protective colloids, suspending agents, textile sizes, many more.

Features: By varying the concentration of these acrylic polymers in solutions, and by varying the pH and the temperature of the solutions thus formed, an almost infinite variety of solution viscosities can be obtained.

Description: Acrylic polymers comprise a series of 3 modified sodium polyacrylates with differing viscosities — designated as low, medium, and high, respectively. They are water soluble, anionic colloids being offered in trial-lot quantities as straw-colored aqueous solutions.

Viscosities of acrylic polymer solutions as a function of concentration are indicated in Table I. A straight line is obtained for the low-viscosity type; but for the medium- and high-viscosity types, the lines are very slightly curved.

TABLE I

Viscosity of Acrylic Polymer Solutions
as a Function of Concentration

Viscosity Type	Solids % Weight	Viscosity As Supplied	Poises (25°C) 5% Solution
Low	25	110	0.3
Medium	20	240	1.5
High	15	340	5.0

Note: The pH of each is 7.5 ± 1.0.

Effect of pH on viscosity of the medium-viscosity acrylic polymer solutions is given in Table II. Solutions are stable over the entire alkaline range. On the acid side, solution pH can be lowered to approximately 4 with strong, inorganic acids. Using acetic acid for pH adjustment, pH can be lowered to 2.5 before coagulation occurs.

TABLE II

Effect of pH on Viscosity of Medium-viscosity Acrylic Polymer Solutions

Concentration, % Polymer	pH 5	Viscosity, poises pH 7	pH 9
5	0.70	1.1	1.2
10	4.4	8.0	8.5
15	29	48	53
20	185	230	280

Change of viscosity of acrylic polymer solutions is rapid over the range 20 to 70°C. When cooled to 0°C, they become amorphous solids, or super-cooled liquids which solidify after slight agitation. This treatment does not affect the polymer adversely. After raising the temperature to approximately 15°C, the solutions are pourable again. Little change in viscosity occurs under storage at relatively high temperatures.

Salt tolerance is good. Anions and monovalent cations appear to have no effect on the stability of acrylic polymer solutions. Solutions will also tolerate appreciable amounts of divalent cations and small amounts of cations of higher valence.

Solvents of a hydrophilic character such as ethanol, isopropanol, and acetone are relatively compatible with the solutions, whereas hydrocarbons are not. Compatibility with typical anionic and cationic surface active agents ranges from good to fair. Compatibility with such other colloids as gum arabic, gum ghatti, dextrose, and glue is good; with methyl cellulose, compatibility is poor.

Common molds and bacteria do not appear to affect solutions.

Source: Products of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 2046 on handy form, pages 2 and 3.

Operating Exchange Capacity of Cation Exchange Resin Is as High as 30,000 Grains/Cu Ft (as CaCO₃)

Salt requirements of bead-like product are as low as 0.25 lb per kilograin hardness removed

USES: A resin type cation exchanger for use in water treatment installations, and in ion exchange application outside the water treatment field, such as metal recovery, purification of acids and other solutions in first step of demineralizing or deionizing process.

Features: Exchange capacity, on sodium or hydrogen cycle, can be up to 30,000 grains per cubic foot. Salt requirements are as low as 0.25 lb NaCl per kilograin of hardness removed. Acid requirements are 0.22 lb HCl or 0.5 lbs. H₂SO₄ per kilograin.

CHEMICAL PROCESSING

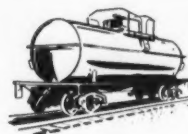
The **+** in Hooker Caustic Soda is SERVICE

When you buy a basic chemical like caustic soda, *service* is an important factor in determining your source of supply. As a basic producer, Hooker offers you these advantages:



1. Caustic soda of high purity, low in iron and sulfates . . .

and



2. Modern equipment for loading and shipping to maintain that purity from our plant to the user's plant . . .

+



An experienced technical service staff to help you use and handle caustic soda.

To you this means minimum processing costs through elimination of variations in quality from shipment to shipment. To make sure that Hooker Caustic reaches you as pure as it leaves us, we coat Hooker tank cars with a special protective lining. Each car is completely insulated and equipped with a heating device to make handling and unloading uniform the year around.

+ You can reduce processing costs further through the safe and efficient handling of caustic soda. This is where the specialized knowledge of our technical service staff can help you.

For analyses and specifications on Hooker Caustic Soda, write on your business letterhead for Technical Data Sheet No. 735.

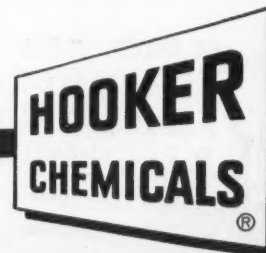
Hooker Caustic Soda is sold in solid, flake or liquid form. Liquid is supplied in 50% and 73% concentration.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

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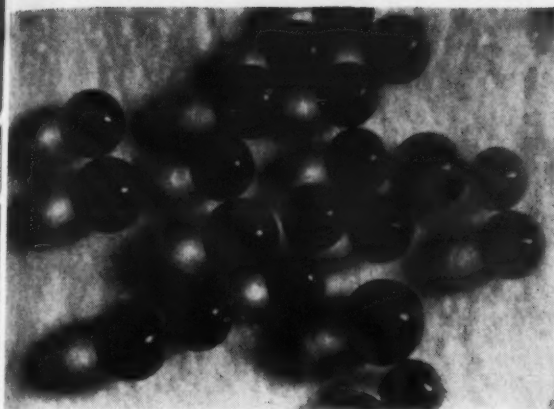
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10-1846

SODIUM SULFIDE • SODIUM SULFHYDRATE • SODIUM BENZOATE • CHLORINE • MURIATIC ACID • PARADICHLOROBENZENE • MONOCHLOROBENZENE

When inquiring check CP 2049 on handy form, pgs. 2-3



Bead-like structure of Permutit Q is illustrated in this photomicrograph

It is reported that this exchanger can increase the capacity of existing water treatment installations up to 10 times, and often increases the allowable flow rate up to 50%.

Description: Permutit Q is a sulfonated, cross-linked polystyrene cation exchange resin in the form of golden-brown beads having an average diameter of 0.5 mm (see photo). The material weighs 50 lb/cu ft as shipped. It is resistant to oxidizing agents (free aqueous chlorine and others), high temperatures, and can be used at extremely high or low pH.

Backwash rate is 5.0 gpm/sq ft, minimum rising space is 75% of bed depth, softening rate is 8 gpm/sq ft, and regeneration time 60 to 75 minutes.

Source: Product of The Permutit Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y. . . . or for more information check CP 2047 on handy form, pages 2 and 3.

Informative book describes finishes for aluminum

Book contains 124 — 6x9" pages, 37 illustrations, 18 tables, table of contents, and itemized cross-index. It supplies basic information on various processes for applying surface finishes to aluminum, and details characteristics of finishes so produced. Information is given on 10 cleaning treatments, 15 mechanical finishes, 16 chemically produced finishes, 11 electrolytic oxide finishes, organic finishes, and such specialized finishes as luminous paints and vitreous enamels.

"Finishes for Aluminum" is available on direct letterhead request to Reynolds Metals Company, Dept. CP, Louisville, Kentucky.

Details polyvinyl chloride film formulations

Properties and uses of typical polyvinyl chloride film and sheeting formulations are described in 12-page bulletin. Pointing out that plasticizers are as important to the quality of finished products as the resin itself, bulletin contains full information on various types of plasticizers and their functions. Composition and relative values of 7 stabilizer systems are shown.

Also included is comprehensive list of suppliers of raw materials required in the recommended formulations. Technical Bulletin 0-70 is issued by Monsanto Chemical Company, Dept. CP, St. Louis 4, Mo. When inquiring specify CP 2048 on handy form, pages 2 and 3.

Announcing . . .

POLYCIZER 332

(Diocetyl Adipate)

POLYCIZER 162

(Diocetyl Phthalate)

Here are two new plasticizers that can contribute vital improvements to your vinyl and other synthetic resin and rubber products—

and reduce production costs, too!

They are free from odor, low in acidity and practically colorless. They will provide good heat and light stability, better low temperature properties, higher loading without exceeding hardness requirements.

- * For Vinyl Extrusions . . .
- * For Heavy-Loaded Sheet . . .
- * For Film Sheeting, Plastisols, Organosols . . .
- * For Oil-Resistant Rubbers . . .

Write Today for Complete Data.

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BRANCHES: BOSTON, TRENTON, CHICAGO, LOS ANGELES

When inquiring check CP 2050 on handy form, pgs. 2-3

use Maleic Esters

for

DIETHYL Maleate

Sp. Gr.: 1.0703
B. P.: 222.4 C

DIBUTYL Maleate

Sp. Gr.: 0.9964
B. P.: 280.6 C

DI(2-ETHYLHEXYL) Maleate

Sp. Gr.: 0.9436
B. P.: decomposes

COPOLYMERIZATION WITH:

Vinyl Chloride
Vinyl Acetate
Acrylonitrile
Vinylidene Chloride

AND AS INTERMEDIATES IN NEW SYNTHESSES

Inquiries for other Maleic Esters are invited.

CARBIDE AND CARBON CHEMICALS DIVISION

UNION CARBIDE AND CARBON CORPORATION

30 E. 42nd St., New York 17  Offices in Principal Cities
In Canada: Carbide and Carbon Chemicals, Limited, Toronto

When inquiring check CP 2051 on handy form, pgs. 2-3

MATERIALS

Presents castings formed from corrosion-resistant alloys

Various stainless steel and corrosion-resistant alloy castings are described and illustrated in 16-page booklet. Data on properties of these alloys are included with photographs of many different shaped and sized centrifugal and static castings. Tables and charts show mechanical and physical properties.

Booklet 112 is issued by Michiana Products Corporation, Dept. CP, Michigan City, Ind. When inquiring specify CP 2052 on handy form, pages 2 and 3.

Each of 8 chemical products being offered has very specialized use . . .

include gellant for petroleum solvents, wettable zinc stearate, and driers for coating formulations

Eight chemical products being offered by this manufacturer have a wide range of specialized applications. One is a gelling agent for petroleum solvents; another is a wettable form of zinc stearate for coating rubber and allied materials; another still is a grease-grade aluminum stearate; and the remaining are specialized additives for paint and varnish formulations.

Aluminum octoate

Interesting to the paint and ink industry is the fact that this product has the ability to gel petroleum solvents at room temperature. Gels of petroleum solvents made with stearates have a "short" flow; however, same solvents gel with 1/3 to 1/4 the amount of aluminum octoate and have a "long string". This may enhance the brushability of paints and the thixotropic body required in some inks. Selection of solvent is more critical when making aluminum octoate gels since, for example, solubility in mineral oil is poor. Gels do not break down with additives which destroy stearate gels.

Product is the aluminum salt of the 8-carbon acid, 2-ethyl hexoic acid, and is a fine white powder.

Wettable zinc stearate

Having the same specifications as other of maker's zinc stearates, Zinc Stearate #10 has the added property of dispersing rapidly in water. With suitable application equipment, water dispersions are usable wherever zinc stearate is now used as a dusting agent. Especially useful in rubber industry for sheeted and extruded goods, and other applications where metallic soap coatings are required. Wet application method avoids loss of product through dusting, and affords accurate control over thickness of coatings deposited.

Usually used at concentrations of 0.5 to 5% by weight of dry stearate in water. Recommended application is by dip tank. Product is a very fine, white powder, containing only a fractional percent moisture.

Calcium stearate

As a pigment suspension agent for paints, Calcium Stearate #40 is reported to overcome the seeding difficulties and viscosity variations sometimes encountered with aluminum stearates. Other uses include internal lubricant for molding plastics; waterproofing agent for cement, paper, and textiles; dry lubricant for wire-drawing; and hardening agent for waxes.

Mild gellation tendency offers a convenient means for

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LOWERING YOUR
PROCESSING COST**

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today for full
information**

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If you are interested in vitamin analysis, antibiotic manufacturing, or related processes, write us giving a brief description of your application and you will receive the most advanced information on Filtrol's range of selective Chromatographic Adsorbents that are designed for improvement of present processes and new techniques.

About...better Decolorizing Agents

If your manufacturing processes demand lowest color at lowest cost, a brief description of your specific decolorizing application will bring full information on Filtrol decolorizing agents with varying physical and chemical properties, best suited to meet your exacting requirements for product betterment, and process improvement.

About...better Purifying Agents

When processes call for an adsorptive-type purifying agent—where highest purity at lowest cost is important—write today stating your application requirement. You will receive full information on the wide range of Filtrol purifying agents that leaders in the field choose from to gain, in their specific applications, highest purity—absolute uniformity, and apply latest techniques.

About...better Activated Catalysts

Filtrol, in supplying the world's most varying and exacting requirements for catalysts, is able to offer you information on catalysts and catalytic processing that has proven most successful for every major application requiring a powerful, uniform catalyst that produces high specification results at minimum costs. Advise us of your application, and we will send you the most advanced information on techniques, and the Filtrol catalysts that make them possible.

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When inquiring check CP 2053
on handy form, pgs. 2-3

CHEMICAL PROCESSING

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against
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**MAGNOLIA
AIRCO
NITROGEN**
for
oxygen-free
atmospheres

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and other processes requiring an inert atmosphere, use Magnolia Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion.

Magnolia Airco is one of the leading producers, purifiers and suppliers of nitrogen in the southwest.

To meet your requirements Magnolia Airco can supply nitrogen in 224 cu. ft. cylinders, or, if your plant is conveniently located and is equipped with an internal pipeline, delivery in bulk may be made in trailers. For further information address our nearest office.



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MAGNOLIA CO.**

A Division of Air Reduction Company, Incorporated
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Southern Headquarters for Oxygen, Acetylene and Other Gases... Carbide... Gas Welding and Cutting Machines, Apparatus and Supplies... Arc Welders, Electrodes and Accessories.

When inquiring check CP 2054 on handy form, pgs. 2-3

MATERIALS

controlling pigment suspension and paint viscosity, as well as flow and sag characteristics. Fine particle size permits adding the stearate to other dry pigments prior to grinding. One pass over a roller mill is enough to obtain a dispersion equivalent to a fine enamel grind. Preparation of stock gels in solvents is eliminated. In general use, 5 parts of calcium stearate by weight replaces 3 parts by weight of aluminum stearate.

Product is insoluble in almost all commonly used solvents at room temperature, dissolves completely in these solvents upon heating, and either comes out of solution or forms a soft paste upon cooling to room temperature again. This fact affords its use as a flattening agent in finishes.

Aluminum stearate

Grease grade product, Aluminum Stearate 22 H, is intended for use in plants where procedures, equipment, and oil stocks employed do not permit direct utilization of maker's extreme high-gel product (22 G). Good soap economy and easy handling are reported for 22 H. Greases are resistant to "bleeding", exhibit good mechanical stability, and have excellent clarity.

Has the advantage of being readily incorporated into oils at temperatures lower than those required for many other aluminum stearates, maker reports. Amount of 22 H required to produce No. 1 and No. 2 NLGI grades of grease lies in the 4 to 6% range for most oil stocks.

Cobalt octoic drier

As a drier for soya modified alkyd resin varnishes and enamels, 6% Cobalt Octoic Drier gives an average dry time of 4½ hours instead of usual 6. This is also noticeable in maleic modified soys. For dry times equivalent to those of the naphthenates, reduction of drier content is possible with this product. In addition to being a rapid "top" drier, it possesses the advantage of having less odor than naphthenate types. For this reason it is especially useful in paints, varnishes, and inks applied to food wrappers and containers.

For air drying finishes, 0.01 to 0.06% cobalt metal is recommended; baking finishes require 0.005 to 0.02% cobalt (based on resin present). This cobalt metallic drier is made from 2-ethyl hexoic acid.

Calcium naphthenate

Having increased calcium content, 6% Calcium Naphthenate finds application as a stabilizer for preventing precipitation of lead drier in varnish, and as a substitute for lead in drier combinations in fume-resisting or non-toxic paints. Product affords introduction of desired amount of calcium metal into a formulation with smaller addition of total drier. Drier calculations are simplified.

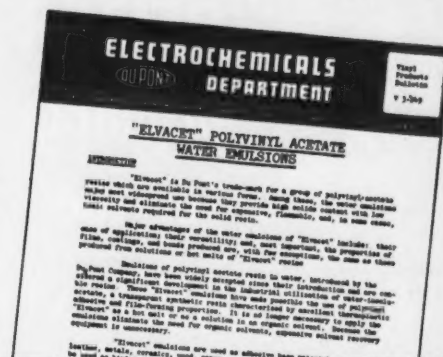
Shows good compatibility with solvents, drying oils, and resins. Material is a free-flowing, mobile, clear liquid.

Zinc naphthenate

Known as 8% Zinc Naphthenate, product is an auxiliary drier used in conjunction with cobalt to modify and control "top" drying action. Prevents surfaces of finishes from drying too fast and thus wrinkling. Commonly used in baking finishes. Contributes to higher gloss and greater film hardness. Wetting action facilitates dispersing pigments into vehicles and minimizes

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DU PONT "ELVACET"
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POLYVINYL ACETATE EMULSION

Versatile Du Pont "Elvacet" emulsion has already proved to be the solution to many problems in many fields. Perhaps this interesting resin emulsion can lead to a *saving in your operations* . . . an *improvement in your product* . . . or to *development of an entirely new and profitable item*. Why not look into its outstanding possibilities right now?

"Elvacet" is already being used for:

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BINDERS
GREASE-PROOF COATINGS
TEXTILE FINISHES: fabric stiffeners, coatings; laminations; hat sizes.

"Elvacet" emulsion contains colorless, odorless, non-yellowing film-forming resin with excellent aging and light-fastness properties. It is easily applied, requiring no costly or flammable solvents and is uniformly dispersed in water. Furthermore, "Elvacet" emulsion exhibits wide latitude in compounding with starches, dextrin, gums, waxes, many synthetic resins, chlorinated rubber, rubber latex and other common types of extenders, pigments and plasticizers.

FOR FURTHER INFORMATION about "Elvacet" emulsion, help in its use for a specific application, samples, etc., clip the coupon below and send it today to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Dept., Wilmington 98, Delaware.

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Please send me information about "Elvacet" polyvinyl acetate emulsion.

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CPP-1

When inquiring check CP 2055 on handy form, pgs. 2-3

2 PFIZER products for the TEXTILE INDUSTRY

PFIZER AMMONIUM GLUCONATE TECHNICAL

Vat soluble ester printing pastes catalyzed with PFIZER AMMONIUM GLUCONATE technical give brighter, sharper, clearer prints with stronger color values because this new acid-forming catalyst:

1. makes more stable pastes,
2. inhibits dulling action of metallic ions by its sequestering action.

Ammonium Gluconate is a stable, non-toxic, free-flowing and non-corrosive salt which can be incorporated into printing pastes without difficulty. It is marketed as a dry, odorless, readily soluble powder which decomposes upon steaming to yield an efficient non-volatile acidic medium.

Recent experimental work indicates that Ammonium Gluconate can be used as a catalyst for urea-formaldehyde resins.



PFIZER GLUCONIC ACID TECHNICAL

Where a mild, non-toxic, non-volatile acid is recommended for other acidic-type, dye-stuff printing pastes, PFIZER GLUCONIC ACID technical is suggested. This odorless, non-corrosive acid is strong enough to form clear, bright and sharp colors, yet mild enough to avoid injury to the fabric. Like its ammonium salt, it also acts as an efficient sequestering agent for metallic contaminants. Used in the preparation and application of acid colloid resins, Gluconic Acid develops no odor and requires no after-wash.

For Technical Bulletin No. 6, samples and prices of both products, write today to: Chas. Pfizer & Co., Inc., 630 Flushing Avenue, Brooklyn 6, N. Y.; 425 North Michigan Avenue, Chicago 11, Ill.; 605 Third Street, San Francisco 7, Calif.



PFIZER
Manufacturing Chemists
for Over 100 Years

MATERIALS

skinning. Fungicidal properties extend its use as wood and fabric preservative.

Characterized by low viscosity, good stability, and ready compatibility with solvents, oils, and resinous vehicles. Used in concentrations of 0.005 to 0.5% of zinc metal based on the total drying oil and resin solids present.

Iron tallate

This iron drier, 6% Iron Tallate as it is known, is employed in baked enamels and varnishes and in compositions containing resinous or drying oil binders. Although iron has only slight catalytic effect at ordinary temperatures, it is one of the most active driers known at elevated temperatures. Sludging common to other iron driers is eliminated, assuring unchanged metal content regardless of length of storage. Completely soluble in petroleum solvents and drying oils; no danger of cloudiness or sedimentation upon addition to vehicles, maker reports.

Source: Products of the Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. . . . or for more information check CP 2057 on handy form, pages 2 and 3.

12-hydroxystearic acid offers advantages in lubricating greases and soaps . . .

hydroxy group aids solubility in polar solvents and minimizes foaming in sodium and potassium soaps

Uses: Applications in manufacture of lithium base lubricating greases, soaps, pharmaceutical ointments, waxes, plasticizers, and water dispersants are suggested.

Features: In general, the presence of the hydroxy group tends to aid solubility in polar solvents. Lithium hydroxystearate is able to form greases with oils that are polar in nature. Other advantages of hydroxystearate base grease are said to be its relatively high resistance to shearing stresses, and general all purpose performance.

Sodium and potassium soaps of hydroxystearic acid are substantially non-foaming in contrast to sodium and potassium stearate.

The relatively high melting point of 12-hydroxystearic acid offers an advantage over ordinary commercial fatty acids. Also the reactive hydroxyl group opens up new reaction possibilities heretofore unattainable with ordinary types.

Description: Commercial M-358-R 12-Hydroxystearic Acid contains about 85% actual 12-hydroxystearic acid, the remainder being chiefly stearic acid. Tentative specs are: free fatty acid (as 300 molecular weight) — 95% minimum; iodine value (Wijs) — 5.0 maximum; melting point (capillary) — 73°C minimum; and color (Lovibond 1" cell) — 10.0Y/2.5R maximum.

Emery 12-Hydroxystearic Acid is a hard, amorphous solid, with a typical ash-content of 0.01%, and saponification number of 196. Free fatty acid decreases somewhat upon heating. Below 100°C, the decrease is small, but it becomes greater at higher temperatures. For instance, a sample with initial FFA of 97.5% has FFA of 95.7% after being heated 4 hr at 100°C in open container, 91.3% after 4 hr at 120°C, and 88.6% after 4 hr at 130°C.

The material is soluble in most hot organic solvents. Gels form approximately 10% concentration at room

MATERIALS

temperature with petroleum naphtha, carbon tetrachloride, ethyl acetate and xylol (clear gel). Slow crystallization occurs from 10% solution in acetone. A 10% solution in ethanol remains clear at room temperature.

Some alkyl and glycol esters of 12-hydroxystearic acid have shown possible use in ointments and waxes. When the acid is oxidized (CrO_3 in acetic acid), 12-keto stearic acid is formed. Esters of this acid have been proposed as plasticizers. Keto acids have also been formed by catalytic dehydrogenation of 12-hydroxystearic acid.

White, waxy solids, capable of acting as water dispersants, are stated to be formed by reacting alkanol amines with hydroxystearic acid.

Source: Development of Emery Industries, Inc., Dept. CP, Carew Tower, Cincinnati 2, Ohio . . . or for more information, check CP 2058 on handy form, pages 2 and 3.

Case-liner adhesives for those who supply the armed forces . . .

conform to JAN specifications; compounded for slow or fast tack range, as required

Uses: Case-liner adhesives conforming to Joint Army and Navy Specification JAN-P-140. They meet requirements for strength, mold and fungi resistance, and water resistance in use with triplex and pleated barrier materials (Type 1), as well as duplex uncreped, coated, saturated, or asphalt infused sheets (Type 2).

Features: Compounded for slow and fast tack range as required in the specification A and B grades.

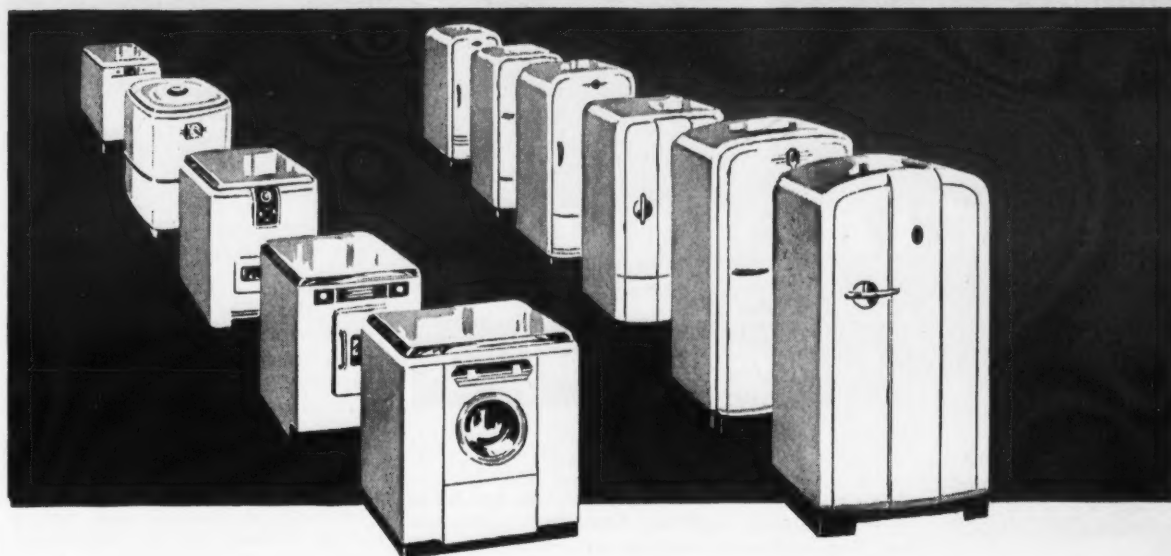
Description: Flintkote No. 704 case-liner adhesives fill the needs of military depots and contractors who supply the armed forces. Products are used as seam sealers and closures for waterproof paper bags, wrap and case liners.

Source: Testing samples, as well as assistance with machine and hand application problems, are furnished by the Industrial Products Div. of The Flintkote Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. . . . or for more information check CP 2059 on handy form, pages 2 and 3.

NBS issues bibliography on high polymers

Reference list of both American and foreign scientific papers on high polymers is contained in 56-page NBS publication. Bibliography, listing fundamental physical and chemical investigations in this field, provides a convenient source of reference for scientists engaged in investigations of the basic properties of polymers as well as those dealing specifically with plastics, rubbers, or textiles.

Arrangement of the material corresponds to principal lines of research currently being pursued. Thus, chief divisions are those dealing with physical properties of bulk materials, solutions and gels, and reactions. Subdivisions include rubbers; plastics; fibrous materials; thermodynamics of solutions; molecular weight and size; concentrated solutions; and cross-linking. To obtain NBS Circular 498, remit 20c direct to Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.



for fast-drying enamels
that speed product finishing

USE No. 3520 BECKAMINE

Want to add fast-drying qualities, excellent gloss and good color retention to your baking enamels? You can do all three in one easy operation by including RCI's remarkable No. 3520 Beckamine in your enamel formulations! This urea-formaldehyde resin reduces both the time and temperature required in baking schedules, gives products excellent initial color, good color retention, and extreme resistance

to heat, water, soap, fatty acids and weather. Particularly suited for use in the manufacture of baking enamels for metal kitchen cabinets, refrigerators, automotive finishes and undercoats, No. 3520 cuts the drying period, helps manufacturers speed product finishing. For further information and a working sample write direct to the Sales Department in Detroit.

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When inquiring check CP 2060 on handy form, pgs. 2-3

Quality FINE CHEMICALS

Ammonium Thiosulphate

crystals and 60% solution

A Few Facts:

Crystalline Ammonium Thiosulphate was first made in this country by the Edwal Laboratories. Ammonium Thiosulphate is available as anhydrous white monoclinic crystals and as a colorless 60% solution of high purity. Both forms are essentially free of heavy metals, sulphate and sulphide. The pH of a 60% solution is above 7.0. It is a mild reducing agent and forms soluble complexes with heavy metals including silver.

Applications:

Photography: working ingredient in high speed fixers . . . saves fixing and washing time.

Electroplating: acts as a brightening agent in heavy silver plating baths . . . potentially valuable in other plating.

Leather, Textile and Other Processing Industries: reducing agent in chrome tanning, in chrome color textile printing baths, in bleaching and softening wood for fabrication; an effective antichlor; insecticide and fungicide (U. S. Pat. 1,515,308); ingredient of fog screen (U. S. Pat. 1,358,084).

Technical Service:

Experienced chemists are available to aid with your problems.

Prompt Delivery:

Delivery made from stock . . . from single drums to carloads . . . crystals packed in 100 lb. fibre drums . . . solution in 50 lb. and 125 lb. carboys and 600 lb. lined drums.

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Write for working
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quotations.

When inquiring check CP 2061 on handy form, pgs. 2-3

MATERIALS

For plasticizing vinyls that contact foods . . .

good stability and low-temp properties; no taste or odor

Uses: For plasticizing vinyl plastics which ultimately come in contact with foods.

Features: Extensive tests show that the plasticizer is remarkably resistant to extraction from films by many food products. Has no taste or odor, and has good stability and low-temperature properties.

Description: "Flexol" plasticizer DOP-20 is now being produced in commercial quantities. Maker recommends its trial in such applications as film wraps for prepackaged lamb and beef, vegetables, cheese, and frozen foods; water and ice bags; milk and beer tubing; intravenous tubing; cap liner stock coatings; coatings for food conveyor belts; and adhesives for food packages.

Source: Product of Carbide and Carbon Chemicals Div., Union Carbide and Carbon Corp., Dept. CP, 30 East 42nd St., New York 17, N. Y. . . or for more information check CP 2062 on handy form, pages 2 and 3.

Coatings and driers — two bulletins

Technical reports describe: 1) aluminum, calcium, and zinc stearates for use in protective coatings; and 2) lead naphthenate to accelerate film formation of oils and resins.

Stearates are covered in Technical Service Report M-11; each is available in various grades. Naphthenate is specified in Technical Service Report P-13. It is free flowing, light in color, stable, and readily soluble. Reports are issued by Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 2063 on handy form, pages 2 and 3.

Compares anti-corrosion qualities of metals

Four-page table is designed to assist in selection of the most economical material offering satisfactory resistance to corrosive media. Carbon steel and a number of alloys are evaluated for 350 different corrosive conditions.

"Materials Selection Chart" is issued by The Cooper Alloy Foundry Co., Dept. CP, Hillside 5, N. J. When inquiring specify CP 2064 on handy form, pages 2 and 3.

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A group of aromatic, high-boiling oils having these characteristics

- ★ HIGH SOLVENT POWER—similar to high-solvent naphthas.
- ★ BOILING RANGES—available within distillation range 250°C-375°C. (480°F-700°F).
- ★ COLORS—from light amber to dark brown.
- ★ LOW VISCOSITY and good cold test (20°-30° below zero F).

WRITE for samples and bulletin.

 PENNSYLVANIA INDUSTRIAL CHEMICAL CORP.
CLAIRTON, PENNSYLVANIA
Plants at CLAIRTON, PA.; WEST ELIZABETH, PA.; and CHESTER, PA.

When inquiring check CP 2065 on handy form, pgs. 2-3

DC ANTIFOAM A

the most versatile
and efficient defoamer
on the market

How Corning

MIDLAND, MICHIGAN

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SILICONE
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Write Dept. G today for free sample.

When inquiring check CP 2066 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

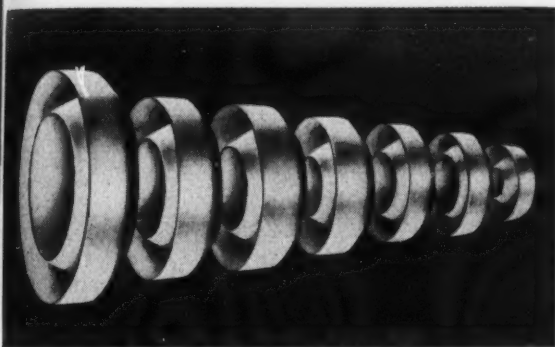
Announces V-ring packing molded from Teflon . . .

takes advantage of tough plastic's chemical inertness, slipperiness and resiliency

Uses: Hydraulic seals (such as valve packing) where high resistance to corrosion is required.

Features: These V-ring type packings have been found to stand up longer than conventional packings previously used in valves made by several leading manufacturers. They form a perfect seal with just fingertip pressure on the gland. Good for temperatures up to 450°F.

Description: The V-ring type packing is a recent addition to this company's line of packings based on



V-ring type packings molded from Teflon

Teflon. This material is particularly suited for packing applications because it is highly corrosion resistant, practically frictionless, resilient and tough. Special design of the V-ring's cross-section assures permanent sealing, even under varying pressures.

Many standard sizes are offered; additional sizes can be specially molded to meet specific requirements.

Source: Dept. M-6, Crane Packing Company, Dept. CP, 1800 Cuyler Ave., Chicago 13, Ill., is the maker . . . or for more information check CP 2067 on handy form, pages 2 and 3.

Describes solution sets for quantitative analyses

Twenty-four-page bulletin describes individual sets of standard solutions, reagents, and indicators necessary for quantitative organic and inorganic analyses. Sets have applications in textile, protective coating, steel, and pharmaceutical analyses.

Titrimetric standards are identified in equivalent groups per milliliter of solution. Sets include special indicators which present clear-cut end points. If methods call for standard solutions of limited stability, sets are furnished with accurately weighed amounts of the dry chemical to prepare fresh standard solution.

When bromine or other corrosive or volatile liquids are used in determination, sets are furnished with accurately weighed amounts of the material in sealed ampoules. Each set comes complete with a copy of the accepted procedure, references, sources of errors, and typical compounds. Every item in each set is also available individually.

Bulletin 1 is issued by Jasons Drug Company, Dept. CP, 1085 Myrtle Avenue, Brooklyn 6, N. Y. When inquiring specify CP 2068 on handy form, pages 2 and 3.

DECEMBER, 1950

ARMOUR Chemical Division

Fatty Acids
Long-Chain Fatty Acid Derivatives
Industrial Oils

Neo-Fat D-242 a low-cost quality rosin replacement

Neo-Fat D-242 is a low-cost fractionally distilled product for use in formulas where rosin has been used. Neo-Fat D-242 is a mixture of rosin acids and valuable fatty acids—approximately 70% rosin acids and 30% fatty acids. The fatty acids present are linoleic and oleic acids in almost equal proportions.

In the protective coatings industry, Neo-Fat D-242 can be used in such formulations as modified ester gums, phthalic alkyds, straight or modified with additional fatty acids, P. E. esters, etc.

Neo-Fat D-242 is well suited for soap manufacture. It is readily soluble in

fats, oils and other fatty acids and, therefore, offers no difficulties in those formulas in which a rosin product is customarily used. Saponification is almost instantaneous as with all fatty acids.

There are many other applications for these fractionally distilled acids including core oils, linoleum, floor covering and greases. Neo-Fat D-242 is also an excellent product in the preparations of asphalt emulsions.

Neo-Fat D-242 is available in 55 gallon drums and in tank cars. Write today for additional information. Free samples will be furnished on request.

Arquad 2HT excellent cationic textile softener

Armour's Arquad 2HT is a new cationic softener developed for use in textile finishing plants and hospital linen supply and diaper laundries. It produces a full, soft handle with maximum lubricity and minimum reduction of absorbency.

As a cationic-active softener, Arquad 2HT is substantive to textile materials and can be readily exhausted onto cotton, rayon and wool from a long bath. As a result, Arquad 2HT can be applied most economically in the mill or laundry and the full value obtained.

Arquad 2HT is a distearyl dimethyl ammonium chloride. Its outstanding softening properties appear to be due to the presence of the two long fatty chains

in the molecule. Arquad 2HT carries a positive charge which is naturally attracted to the negatively charged fabric. This leaves the fatty end exposed to contribute its qualities to the "handle" of the goods.

Arquad 2HT is compatible with certain finishing agents such as starches, dextrans, glue and gelatin. It can also be applied with most urea-formaldehyde and melamine-formaldehyde resin finishes including the new acid colloid resins.

Arquad 2HT is sold in 75% active concentration . . . packed in specially lined open-head drums holding about 400 pounds. Write today for additional information, pound samples, as well as price quotations.

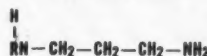


LOOKING FORWARD

The Armour Chemical Division now offers N-alkyltrimethylenediamines which will be marketed under the trade name DUOMEENS. They exhibit the properties and characteristics of both primary and secondary amines of the general formula shown above. The length of the carbon chain in the alkyl group varies from 12 to 18.

DUOMEENS have stronger cationic properties than corresponding primary amines and have been used in conjunc-

N — alkyltrimethylenediamine



tion with cationic emulsifiers in the preparation of resin emulsions in which the oil phase is exhausted onto paper, fibre, fibre board.

DUOMEENS are suggested for possible research in modified alkyds and as a modifier in condensation type resins.

If this new chemical group suggests a possible new development to you, we will be pleased to send you a sample, without charge, of course, for your experimentation.

New booklet offered on Quaternary Ammonium Compounds



Arquads is the trade name given to a series of quaternary ammonium salts manufactured by the Armour Chemical Division. Members of the series vary as to the length and number of long-chain alkyl groups attached to the nitrogen atom.

The booklet contains data on physical and germicidal properties, average composition, compatibilities and the wide range of Arquad applications. Write today for your free copy.

Neo-Fat 11 (90% Lauric Acid) Produced by Fractional Distillation

Armour's Neo-Fat 11 is the answer to your problem requiring a high purity lauric acid. You are no longer forced to buy a mixture of nine coconut oil fatty acids in order to secure the one you really want. Armour's fractional distillation process produces Lauric acid with concentrations of 90% or above.

Neo-Fat 11 and its derivatives may be used in detergents, wetting agents, metallic soap, shampoos and shaving creams. Neo-Fat 11 may also be used in alkyd resins, plasticizers, pharmaceuticals and as intermediates in a number of other synthetic organic compounds.

Mail this Coupon

Please send additional information on

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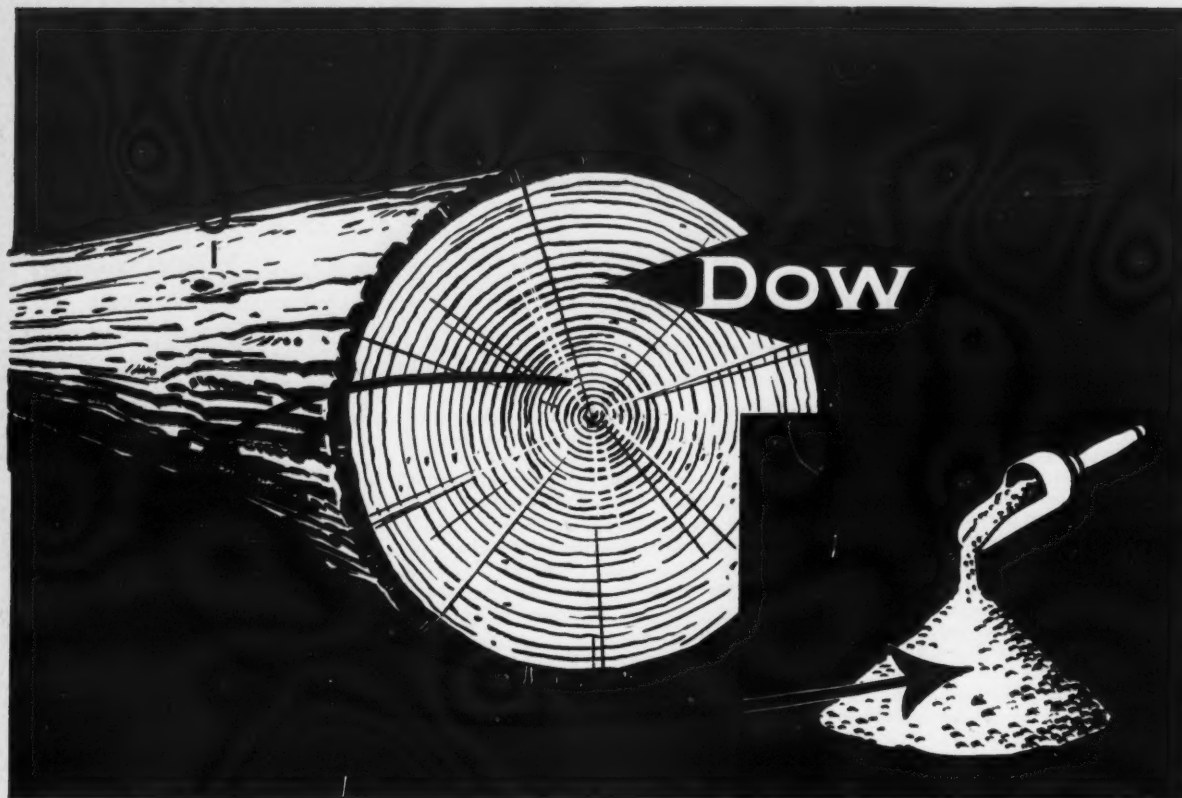
City.....Zone.....State.....

ARMOUR Chemical Division

Armour and Company

1351 W. 31st St., Chicago 9, Ill.

When inquiring check CP 2069 on handy form, pgs. 2-3



How Can Methocel Serve You?

There are five ways Methocel (Dow Methylcellulose) can serve you—five ways that Methocel, a synthetic gum, is already serving the paint, paper, leather, rubber, drug, cosmetic, and many other industries.

Consider these superior uses of Methocel:

1. *As an Emulsion Stabilizer*, Methocel acts both as a depressant for the surface tension of water and as a thickener and protective colloid for stabilizing emulsions.
2. *As a Binder*, Methocel forms a tough, inert

adhesive suitable for various binding applications.

3. *As a Film Former*, Methocel produces an excellent transparent film, tough, flexible and water-soluble.

4. *As a Thickener*, small quantities of high viscosity types are extremely effective.

5. *As a Suspending Agent*, Methocel's thickening and protective colloid properties contribute to the suspension of pigments and fillers in water.

Try the new METHOCEL, *powdered*. Find out how these five performance factors can help you!

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

THE
new

Methocel

DID YOU GET YOUR

SAMPLE?

The Dow Chemical Company
Dept. ME-919-1C Midland, Michigan

Please send free sample of METHOCEL, for use in
Check viscosity desired: 15, 25, 100, 400, 1500, 4000 cps.

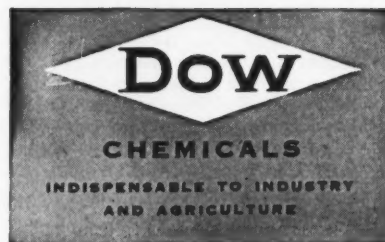
Name and Title _____

Firm _____

Address _____

City _____

State _____



When inquiring check CP 2070 on handy form, pgs. 2-3

MATERIALS

"Physical Aspects of Organic Chemistry"

Physical aspects of organic chemistry are presented and authoritatively discussed in 539-page book written by William A. Waters, Ph.D.

Scope of this work is best evidenced by headings of contents: chemical affinity; valency bonds; study of molecular structure; electrical dipoles; chemical reactivity unsaturation; free radicals and their reactions; radical catalyzed reactions; ionization and ionic reactions; acidity general polarity; substitution reactions of organic halogen compounds; ester hydrolysis and esterification; ionotropic change; molecular rearrangement; reactions of conjugated systems; and aromatic compounds.

To obtain "Physical Aspects of Organic Chemistry", rem \$8 direct to D. Van Nostrand Company, Inc., Dept. CP 250 Fourth Ave., New York, N. Y. When inquiring specify CP 2071 on handy form, pages 2 and 3.

Holds can labels tight despite year of outdoor exposure to variable weather . . .

latex-resin adhesive sets quickly, and won't shrink, crystallize or drop off; has many uses

Uses: For fastening labels to electrolytic tin plate,terne plate, and varnished, lacquered and enameled surfaces. Also suitable for many combining and laminating operations on similar and dissimilar materials such as cork to metal, felt to cardboard, paper to glass, fabric to metal, and many plastics. A recently developed application is in applying paper labels over the varnished and gloss-printed areas of folding cartons and other paper packages.

Features: Very good adhesion to many difficult surfaces. Adhesive sets quickly, holding labels immediately on contact. Film dries in 60 seconds in air, and will not shrink, crystallize or drop off. Flexibility is reported as excellent. The material is non-flammable and has only a slight odor.

Considered as a good machine tin paste, capable of operating without foaming over or building up on the roller.

Description: Resiment is a white, synthetic latex resin emulsion with a viscosity of 6000 cp, pH 8.5-9.0 and weight per gallon of 8.4 lb. It is used cold, and applied by hand brushing, spraying, or by gumming machines. Can be used as received or diluted with water. Storage life is 3 months.

Tests show that paper labels, when pasted on painted test panels with this adhesive, maintain good adherence when aged at 225°F for 7 days, and when exposed for 100 hr at 100% relative humidity at 100°F. After air drying, it produces no objectionable odor when the panel is sealed in an airtight container at 100°F for 24 hr. Furthermore, no harmful effects — permanent staining, etching or softening, and discoloration of labels — are noticed.

One prospective user of the adhesive conducted his own tests. Among them was exposure of cans labeled using

For more information on product at right, specify CP 2072 . . . see information request blank between pages 2-3.

CHEMICAL PROCESSING

first for convenience ...

PITTSBURGH PX PLASTICIZERS

in the quickly identifiable *Color-coded* drums

DilsoOctyl Phthalate PX 108

DiButyl Phthalate PX 104

DiOctyl Phthalate PX 138

TetraHydroFurfuryl
Oleate PX 658 →

DiNonyl Adipate PX 209

DilsoOctyl Adipate PX 208

TriCresyl Phosphate PX 917 →

TriPhenyl Phosphate PX 916 →

DilsoOctyl Sebacate PX 408

DiButyl Sebacate PX 404



Only *Pittsburgh* gives you this real *plus* value when you buy plasticizers!

For only *Pittsburgh* PX Plasticizers are delivered in brightly painted drums—*coded* in a combination of *drum* color and *top* color to show at a glance the *exact contents* of the drum.

No more mix-ups in shipping, delivery, handling, and storage! No more using the contents of a wrong drum because the label was removed, obscured, or misread. The contents of each drum of *Pittsburgh* PX Plasticizer can be quickly and easily identified all the way, all the time!

A display card showing this color code, and giving important commercial information as well, has been prepared! Copies of this, suitable for posting in your warehouse, receiving dock, or mixing room, are available upon request.

Pittsburgh PX Plasticizers

- PX-104 DiButyl Phthalate
- PX-108 DilsoOctyl Phthalate
- PX-138 DiOctyl Phthalate
- PX-208 DilsoOctyl Adipate
- PX-209 DiNonyl Adipate
- PX-404 DiButyl Sebacate
- PX-408 DilsoOctyl Sebacate
- PX-658 TetraHydroFurfuryl Oleate
- PX-916 TriPhenyl Phosphate
- PX-917 TriCresyl Phosphate

Check the above list for your needs—then write today for individual bulletins which give full commercial and technical information about each of the *Pittsburgh* PX Plasticizers.

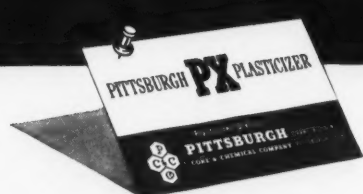


Plasticizer Division

PITTSBURGH COKE & CHEMICAL COMPANY

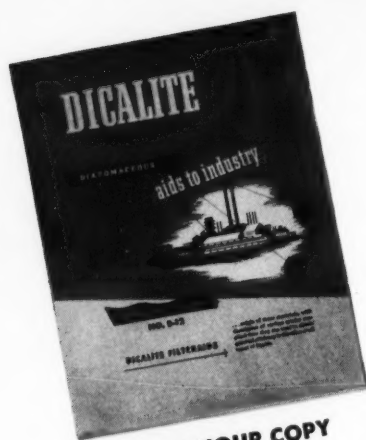
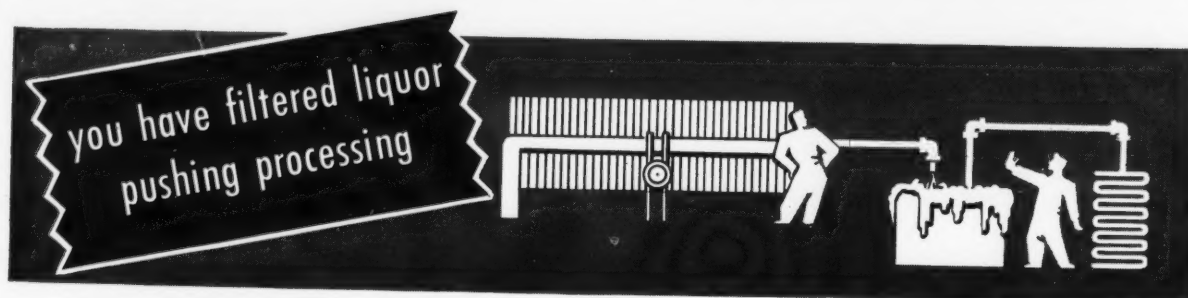
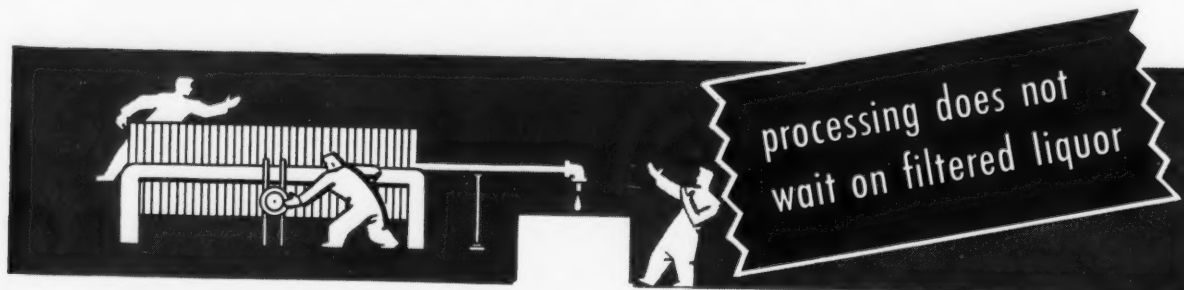
Grant Building • Pittsburgh 19, Pa.

COKE • CEMENT • PIG IRON • PLASTICIZERS • COAL CHEMICALS • ACTIVATED CARBON • PROTECTIVE COATINGS
AGRICULTURAL CHEMICALS • SYNTHETIC ORGANIC CHEMICALS



When using

DICALITE FILTERAIDS



SEND FOR YOUR COPY
Latest published information concerning use of diatomaceous filteraids. Covers fundamentals of filtration and describes best methods of use. Sent without charge on request.

● Production costs are again becoming extremely important. A filter station that lags behind the rest of the plant can increase costs all the way down the line. The range of flexibility available when using Dicalite filteraids prevents this. A wide variation in the filterability of liquids can be readily handled, and output maintained at the desired level. Because brilliant clarity is assured by the inherent qualities of Dicalite filteraids, every following operation benefits by cleaner, clearer liquors, that produce higher quality products at lower cost. Send for your copy of the latest Dicalite Bulletin on filtration—No. B-12. We will be glad to supply as many copies as you need for key men in your filtration department.

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION



NEW YORK 17, N. Y. • CHICAGO 13, ILL. • LOS ANGELES 17, CALIF.

DICALITE FILTERAIDS

When inquiring check CP 2073 on handy form, pgs. 2-3

MATERIALS

the adhesive to northern O. his office for one year. He of the labels from the test ca

Source: Made by Paisley 1770 Canalport Ave., Chicago information check CP 2074

Lubricity, inertness, stability, extend use of fire resistant hydraulic fluid . . .

pump tests reveal lubricity used petroleum based

Uses: Hydraulic fluid is such equipment as die casting turbines, glass drawing machines, etc.

Features: Exceptionally good lubricity and pumping resistance to mechanical shear and inertness to common metals.

Description: Hydraulic amber-colored, oily liquid. Addition properties are tab

Specific gravity
Weight per gallon
Pour point, °F
Flash point, °F
Fire point, °F

Viscosity, centistokes

Viscosity, S.S.U.

In corrosion and oxidation revealed slight darkening of on iron, aluminum, and magnesium are that F-9 has as high, or and wear resistance as common hydraulic fluids. Pump tests pumps confirm this.

Fluid exerts a swelling action on materials and has a solvent action on packing and gasket materials (trade products such as Thompson & RPC's TC-315) are available where the actions of F-9 can

Source: F-9 hydraulic fluid is sold by Santo Chemical Company, Inc. or for more information, form, pages 2 and 3.

Yields pertinent data on soda ash

Comprehensive 64-page illustrated history of soda ash, important basic chemicals. to soda ash production and ture, forms and grades, and Technical data section outlines methods of analysis, largely

"Soda Ash" is available on burgh Plate Glass Company sion, Dept. CP, Fifth Ave. Pa.

DECEMBER, 1950

northern Ohio climate on the roof of
e year. He reports that no separation
n the test cans was found.

e by Paisley Products, Inc., Dept. CP,
Ave., Chicago 16, Ill. . . . or for more
CP 2074 on handy form, pages 2 & 3.

ess, stability
re resistant

reveal lubricity is as high as commonly
um based fluids

lic fluid is recommended for use in
as die casting machines, hydroelectric
rawing machinery, hydraulic presses,

exceptionally good fire resistant qualities,
and pumping characteristics, high re-
nical shear and chemical breakdown,
common metals of construction.

Hydraulic Fluid F-9 is a clear, light-
ly liquid with a mild, pleasant odor.
ies are tabulated below:

avity	1.266
gallon	10.56
F	5
°F	415
°F	640

entistrokes	49.5-58.0 @ 100°F
	5.6- 6.0 @ 210°F

S.U.	229-268 @ 100°F
	44.5-48.5 @ 210°F

oxidation tests, visual examination re-
ening of copper by the fluid; effect
n, and magnesium was nil. Indications
s high, or higher, degree of lubricity
e as commonly used petroleum based
Pump tests in piston and vane type
is.

elling action on some elastomeric ma-
solvent action on some paints. Suitable
ket materials and resistant coatings
such as Thiokol FA, Silastic 250, and
5) are available, and should be used
of F-9 cannot be tolerated.

draulic fluid is a product of the Mon-
company, Dept. CP, St. Louis 4, Mo.
information check CP 2075 on handy
3.

data

-page illustrated manual features de-
oda ash, considered one of the most
chemicals. Other chapters are devoted
action and uses, methods of manufac-
grades, and unloading and handling.
ction outlines properties and various
sis, largely in tabular or chart form.

ailable on letterhead request to Pitts-
Company, Columbia Chemical Divi-
fifth Ave. at Bellefield, Pittsburgh 13,

pointing the way to
successful new developments

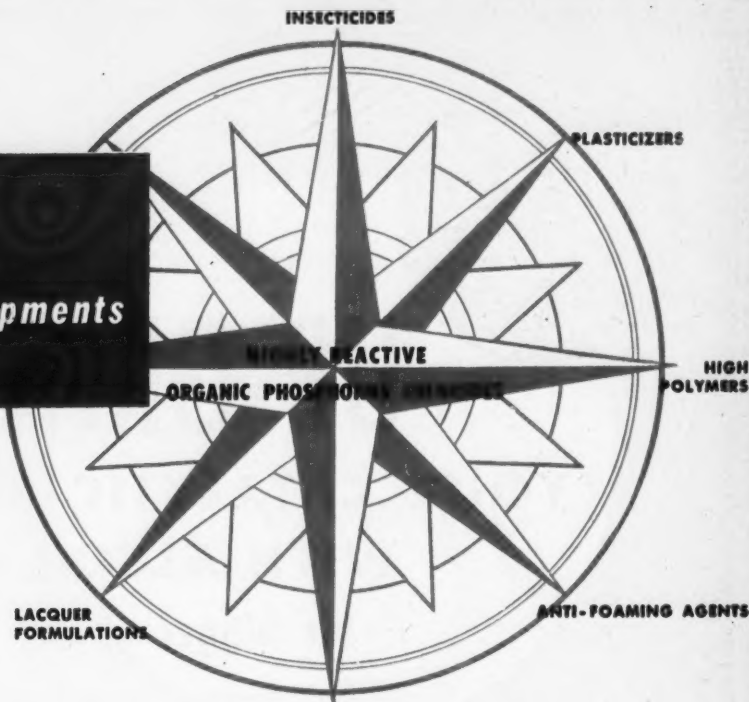
3 IMPORTANT INTERMEDIATES NOW AVAILABLE IN COMMERCIAL QUANTITIES

The commercial availability of this group of organic phosphorus chlorides will be of special interest to research chemists. Already these three chemicals have proved useful as intermediates in organic synthesis for applications in insecticides, plasticizers, high polymers, lacquer formulations, anti-foaming agents, and others.

Victor organic phosphorus chlorides may prove successful in one of your research projects. It will pay you to explore their possibilities! Additional information on Victor organic phosphorus chlorides and their derivatives, as well as experimental samples are available. Check and clip the coupon to your letterhead or write:



VICTOR CHEMICAL WORKS
141 W. JACKSON BLVD., CHICAGO 4, ILL.
A. R. MAAS CHEMICAL CO., Division
4570 Ardine Street, South Gate, California



$C_6H_5PCl_2$	$C_6H_5P(=O)Cl_2$	$C_6H_5P(=S)Cl_2$
BENZENE PHOSPHORUS DICHLORIDE	BENZENE PHOSPHORUS OXYDICHLORIDE	BENZENE PHOSPHORUS THIODICHLORIDE
Benzene Phosphorus Dichloride	Benzene Phosphoric Dichloride	Benzene Thionphosphoric Dichloride

MAIL THIS COUPON FOR MORE INFORMATION AND SAMPLES PHYSICAL PROPERTIES

Please Check INFORMATION SAMPLES		B.p.	n _D ²⁰	Sp.g.
<input type="checkbox"/>	<input type="checkbox"/> Benzene Phosphorus Dichloride	225°	1.5850	1.319 @ 20°C
<input type="checkbox"/>	<input type="checkbox"/> Benzene Phosphorus Oxydichloride	258°	1.5580	1.375 @ 26°C
<input type="checkbox"/>	<input type="checkbox"/> Benzene Phosphorus Thiodichloride	205° @ 130 mm	1.6210	1.376 @ 13°C

Name _____ Position _____

Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 2076 on handy form, pgs. 2-3

UP-GRADE

YOUR CATALYTIC PROCESSES WITH ALCOA ALUMINA

—for bigger yields
—for better quality

If you want to up-grade your catalytic process yields, or simply reduce losses from contamination and side reactions, you'll find it advantageous to insist on ALCOA Aluminas for your Al_2O_3 catalysts and catalyst supports.

ALCOA Aluminas are uniform in structure and chemical purity... stable at elevated temperatures... have high resistance to erosion and crushing... and are moderate in cost. Typical conversions for which ALCOA Aluminas are used include: *Aliphatic hydrocarbons into*

★ **ALCOA Activated Alumina** is preferred for many reactions because of its high adsorptive properties and extremely large surface area.

★ **ALCOA Tabular** and other forms of Alumina are preferred for certain reactions where hardness and extremely high purity are relatively more important than maximum surface area.

aromatics, and dehydrogenation of naphthenic hydrocarbons.

For top quality, specify ALCOA Aluminas for catalysts and catalyst supports. You'll get more efficient, uniform reactions and end-products of higher purity. We'll gladly send you samples and further information.

Write to
ALUMINUM COMPANY OF AMERICA
CHEMICALS DIVISION
606M Gulf Building
Pittsburgh 19, Pennsylvania

Alcoa Chemicals



ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 2077 on handy form, pgs. 2-3

MATERIALS

Protects metal surfaces from corrosion

Anti-corrosion coating described in 6-page folder is odorless and non-inflammable, entirely free of solvents, chemicals, sludge, fillers, or fibres. It protects old or new metal surfaces — roofs, tanks, ducts, stacks, etc. — and covers approximately 100 square feet per gal per coat. Descriptive folder "Longlife" contains photographs and application details; it is available on letterhead request from Flexrock Company, Dept. CP, 3611 Filbert St., Philadelphia 4, Pa.

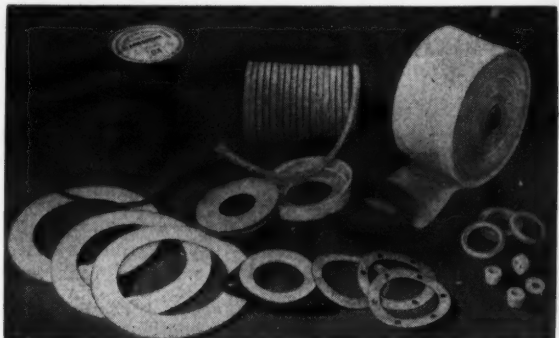
Offers diversified line of Teflon gaskets and packings...

chemically inert items retain toughness between temps of $-90^{\circ}F$ and $+500^{\circ}F$

Uses: Packings and gaskets for valves, reciprocating or rotating rods, flanged joints of all kinds. Main applications are those involving sealing against corrosive chemicals.

Features: Chemically inert to all materials except molten alkali metals. Suitable for use at operating temperatures ranging from below $-90^{\circ}F$ to $+500^{\circ}F$, and they retain their inherent toughness throughout that range. Coefficient of friction at normal operating temperatures is low. Insulating properties are excellent.

Description: Manufacturer's products made of Teflon



Illustrates various forms of Teflon packings and gaskets

include coil, ring, and sheet packings, gaskets, tape, discs, cups, and other molded shapes.

Type 5733 is a rod or shaft packing made of Teflon filament, braided to a nominally square cross-section. This packing is untreated, and is available in coil or ring form, in packing sizes from $1/8"$ up.

Type 8764 is a rod, shaft or flange packing made of Teflon powder, molded to required size and shape. This material is untreated too. It is available in ring, sheet, gasket, tape, disc, or cup form, and is also used for making envelopes for gaskets. These envelopes are employed in certain applications where it is desirable to encase a more standard gasketing material in the inert Teflon, instead of using all Teflon. Sheets are available in thicknesses ranging from $1/32"$ to $1 1/2"$; tape in thicknesses of 0.002 to 0.060". Rings and cups are made to specified sizes and shapes.

Type 9166 is a rod or shaft packing made of shredded Teflon, either alone or with graphite and/or a synthetic hydrocarbon binder. It is available in coil and ring forms. The coil form is made in $5/32"$ round, rectangular in sizes from $1/4$ by $5/16"$ to $3/4$ by $7/8"$, and in $1"$ square. The rings, die-formed, are available in any

MATERIALS

sizes between $\frac{3}{8}$ and 10" ID, $\frac{5}{8}$ and 11 $\frac{1}{2}$ " OD, and $\frac{1}{8}$ and 1" packing space.

Source: The Garlock Packing Company, Dept. CP, Palmyra, N. Y. . . . or for more information check CP 2078 on handy form, pages 2 and 3.

Saturated glycol promises to be useful chemical for industry . . .

1,4-butanediol possesses humectant properties, and is compatible with casein, animal glue, gelatin

Uses: The diol itself has suggested applications as a rayon lubricant, warp size component, additive for sizing and finishing baths, softener for gelatin, casein, cellophane, parchment, tissue paper, glassine and gummed paper, and as a moistener for glues, stencil paper and stamp pad inks. Other possible uses are heat transfer liquid, component for brake fluids, and solvent for printing inks, gums and resins.

Uses have been suggested for many derivatives of the diol. Polyurethans are of value for synthetic fibers and bristles. The fibers show promise for filter cloth and protective clothing. Polyesterurethans have properties that adapt them for use in films and artificial leathers.

Esters of the diol and suitable monobasic acids are effective plasticizers for thermoplastic polymers. Polyesters obtained by reaction of the diol with suitable dibasic acids are excellent plasticizers for polyvinyl chloride or vinyl chloride-vinyl ester copolymers because of the resultant low cold crack coupled with low volatility. These polyesters are reported as good lacquer raw materials, artificial resins, and softening agents for cellulose acetate or regenerated cellulose fibers.

The divinyl ether of this diol is of interest as a cross-linking agent. Copolymers produced have been reported as excellent binding agents for manufacture of floor-covering material.

Features: Almost odorless and colorless. Material possesses humectant properties, and is readily compatible with casein, animal glue and gelatin. Viscosity is 65 to 70 cp, and flash point is less than 250°F.

Description: Technical 1,4-butanediol is now available in pilot plant quantities for research and development purposes. It has a purity of greater than 96%, major impurities being butanol, acetals and some unaturates, besides some water. The freezing point range is 18-19.5°C, boiling range 221-231°C. It weighs about 8.45 lb/gal, and has 0% ash.

The pure compound is infinitely soluble in water, methanol, ethanol and acetone. Solubility in ethyl acetate and ethyl ether is 14.1 and 3.1 gm/100 ml solvent, respectively. Solubility in benzene, chlorobenzene, carbon tetrachloride and petroleum ether is limited.

Material not only undergoes the reactions typical of dihydric alcohols to form open-chain derivatives, but also yields cyclic products, many of which show great promise as future industrial materials.

More information is available in manufacturer's Data Bulletin No. 303.

Source: Antara Products, General Aniline & Film Corporation, Dept. CP, 444 Madison Ave., New York 22, N. Y. . . . or for more information check CP 2079 on handy form, pages 2 and 3.

-In cosmetics



-In textiles



-In foods



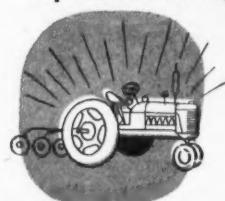
QUICK FACTS ABOUT

Glycerine!

-In drugs



-In protective coatings



5 free booklets—

review Glycerine applications across a wide range of industry. Here's up-to-date information on the role Glycerine plays in your business . . . and a wealth of technical data besides!

All five contain pertinent information on the physical and chemical properties of Glycerine . . . its origin and development . . . grades and their applications, as well as a number of comprehensive tables and graphs.

Compiled by the Glycerine Producers' Association and edited by technical consultants, these easy-to-read booklets are designed to aid the production man as well as the research technician. Check the titles in which you're interested and mail the coupon TODAY!

Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Please send copies of these Glycerine booklets

- ☐ Why Glycerine? (a general survey of all main uses)
- ☐ Why Glycerine for Alkyd Resins and Ester Gums?
- ☐ Why Glycerine for Drugs and Cosmetics?
- ☐ Why Glycerine for Foods?
- ☐ Why Glycerine for Textiles?

Name _____

Title _____

Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 2080 on handy form, pgs. 2-3

Lacquer and synthetic resin finishes are described

Twelve-page brochure describes a number of lacquer and synthetic finishes for appliances, foil, machinery, wood, metal, and similar applications. Featured are a lacquer resin which imparts "an unusual degree of resistance to cracking and checking" to the lacquers in which it is used; 2 alkyd resins developed for wall finishes which possess "hitherto-unheard-of" scrub resistance, non-yellowing, and toughness; and an alkyd resin which, used alone in primers, will withstand recoating with lacquer "any number of minutes or hours after it has been applied" without lifting.

"Tomorrow's Finishes Today" is issued by U. S. Industrial Chemicals, Inc., Dept. CP, 60 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2081 on handy form, pages 2 and 3.

Offers insect toxicant for investigation . . .

acts as a stomach poison, as a contact insecticide, and as a fumigant

Uses: Insect toxicant being offered for investigation.

Features: Heptachlor has a multiple effect on insects — it acts as a stomach poison, a contact insecticide, and as a fumigant.

Dosage of 2 ounces of the toxicant (on an "actual" basis) per acre has given excellent control of grasshoppers when applied as a dust or spray. Field tests have shown that only 1/4 pound of insect toxicant is required for effective control of the cotton bollweevil, as well as thrips and bugs attacking the cotton plant.

Used at the rate of 1/2 to 2 pounds per acre, soil infesting insects such as wireworms, white grubs, mole crickets, Japanese beetle larvae, and cabbage maggots have been effectively controlled. Type of soil here governs the dosage, of course, and more is required in heavy soils than in light.


Control of the plum curculio has been attained when using Heptachlor at the rate of 3 pounds of 25% wettable powder to 100 gallons of water. Roaches, flies, mosquitoes — both larvae and adults — and ants are controlled by low concentrations of the toxicant.

Description: Heptachlor is a white, crystalline solid with a mild, camphor-like odor; empirical formula is $C_{10}H_6Cl_7$. Its residual toxicity is quite good; however, its residues are not quite as long-lasting as those of chlordane and DDT, which have lower vapor pressures.

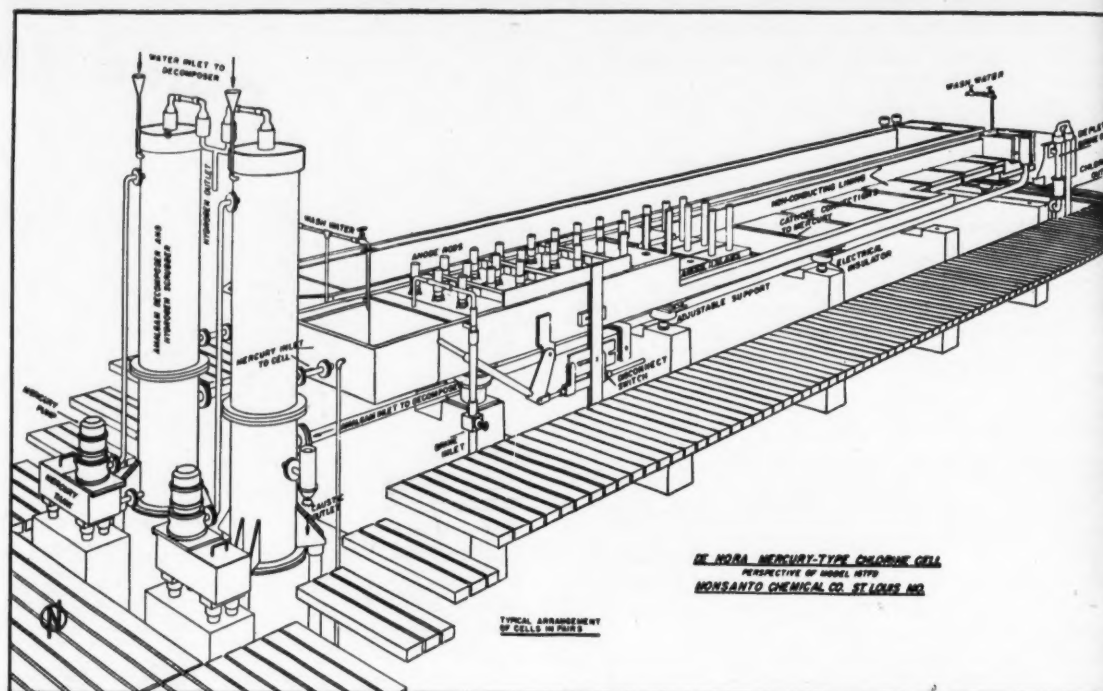
Toxicant is resistant to the effects of heat — it does not break down at temperatures as high as 160°C. It is stable under prolonged exposure to light, moisture, and air. Solutions are stable under conditions of elevated temperatures, and in intimate contact with aqueous mineral acids, bases, and oxidizing agents.

Heptachlor may be formulated as oil or kerosene solutions, emulsifiable concentrates, wettable powders, dusts, etc. Due to its crystalline nature, the toxicant is readily blended and ground with inert diluents such as fullers' earth, diatomaceous earth, kaolin, and pyrophyllite for preparing wettable powders, dust concentrates, and dusting powders.

Source: Heptachlor is a product of the Velsicol Corporation, Dept. CP, 330 E. Grand Ave., Chicago, Ill. . . . or for more information check CP 2082 on handy form, pages 2 and 3.



Every month Monsanto publishes these pages of pertinent information. Here you will find suggestions and application ideas selected to help you improve your products, lower your production costs, increase your sales. More information will gladly be furnished on request.



Have You Investigated the Monsanto Electrolytic Chlorine Process?

QUICK FACTS ABOUT THIS PROCESS:

- 1) Simultaneous production of rayon-grade caustic up to 73% without evaporators or purification.
- 2) All or part of the caustic production may be replaced by production of sodium sulfide or various other products.
- 3) Uses the De Nora mercury-type cell which has been employed commercially for fourteen years. Of all mercury-type cells, it is the most rugged and compact. It requires minimum maintenance and a minimum amount of floor space.

If you would like to know more about the Monsanto Electrolytic Chlorine Process write or wire Monsanto Chemical Company, Engineering Sales Department, 1700 South Second St., St. Louis 4, Missouri.

Mail coupon for bulletin on Monsanto Plasticizers

If you manufacture polyvinyl chloride film and sheeting, you will find Monsanto Technical Bulletin No. O-70 interesting and profitable reading. The 11-page bulletin gives the properties and uses of typical formulations, detailed information on various plasticizers and their functions and the composition and relative values of seven stabilizer systems. For your free copy of Technical Bulletin No. O-70, "Monsanto Plasticizers in Polyvinyl Chloride Film and Sheet," indicate your wishes on the coupon and mail it to Monsanto.

Application research expanded at Monsanto

Monsanto's research in the application of chemicals to other industries has been expanded with the creation of a special section in the Organic Division Research Department to carry on such work. Present application research deals with plasticizers, agricultural chemicals and oil additives. In the future, projects will be handled in all fields served by the hundreds of Monsanto Chemicals.

Monsanto's nontoxic plasticizers have many uses and possibilities

The development of nontoxic plasticizers has opened new horizons for plastic products, including coatings, adhesives, films, sheeting, extrusion articles and molded items. In the Monsanto line of plasticizers, all of which are in limited supply, are three Santicizers that have been accepted as nontoxic by the Bureau of Animal Industry of the United States Department of Agriculture. These nontoxic plasticizers are Santicizer* 141, Santicizer B-16 and Santicizer E-15.

The list of applications of these Santicizers may suggest uses helpful in your business. If, after reading the list, you want further information, mail the coupon or contact the nearest Monsanto Sales Office.

Applications of nontoxic plasticizers include:

COATINGS

Paper—Greaseproof coatings for doughnut packages, ice cream cartons, paper plates, cap linings for beverage bottles.

Metal—Can linings.

Cloth—Upholstery or other fabric applications where skin contact may result in irritation.

ADHESIVES

Paper—For fabricating leakproof containers such as milk cartons, orange drink bottles and similar products.

Metal—Can-sealing compounds for containers such as lard cans.

FILMS AND SHEETING

Plasticized Film Packaging—For packaging such items as fresh meat, frozen meat, prepared and cured meat, poultry, cheese (both natural and processed), butter, margarine, lard and shortening, candy, vegetables and fruits (both fresh and dried), bulk produce (such as apples, cranberries, potatoes, grapes), staples (such as flour).

Nonirritating Items—Baby pants, hospital sheeting, household scrub gloves.

EXTRUSION ARTICLES

Tubing—Venoclysis (blood transfusion) tubing, milk and beer tubing.

MOLDED ARTICLES

Prosthetic Devices—Artificial ears, fingers, etc., gum dentures, nontoxic sponges.

Monsanto Intermediates

The following intermediates are available from Monsanto:

Dinitroaniline
Nitrochloraniline
Methyl Para Toluene sulfonate
Monsanto Salt
Orthochloraniline
Toluenesulfonic Acid

Orthochlorophenol
Orthonitrophenyl
Orthoaminobiphenyl
Parachloraniline
Toluenesulfonic Acid

Limited supplies are available on certain other Monsanto Intermediates and prompt shipment may or may not be possible. If

Try Sterox CD—low-sudsing, 100%-active, non-ionic, synthetic detergent and wetting agent

Take a look at Monsanto Sterox* CD when your industrial processes call for a low-sudsing, 100%-active detergent or wetting agent or when you are developing detergent mixtures for home or commercial use. If you want to try Sterox CD in your laboratory, we'll be glad to send you a sample and answer any questions that you may have.

Sterox CD is a pale-yellow to light-amber liquid with a mild odor that is not objectionable but which can be perfumed easily if desired. At room temperature, Sterox CD is of medium viscosity, having a pour point of approximately 50° F. It is miscible with water in all proportions at room temperature.

Sterox CD is efficient in hard or soft water. It is compatible with synthetic detergents and soaps. It frequently is advantageous to add Sterox CD to anionic detergents. Sterox CD is compatible with cationic-type detergents and gains increased efficiency when combined with such builders as phosphates, silicates and carbonates. It is used effectively with acid-type cleaners.

The addition of small amounts of Sterox CD to dry detergent mixtures will substantially reduce dusting during the mixing operation and in the finished product.

For complete data and a sample for use in your laboratory, mail the coupon or contact the nearest Monsanto Sales Office.

New isocyanate

Ethyl isocyanate has been added to the extensive line of isocyanates available from Monsanto. Isocyanates are used in adhesives, paint, rubber, plastics and textiles. Mail the coupon for data.

you need any of the following intermediates, contact the nearest Monsanto Sales Office for the latest information on availability:

Benzic Acid
Benzyl Chloride
Parachlorophenol
Paranitrochlorobenzene
Paraphenetidin
Paratoluenesulfonchloride
Paratoluenesulfonamide
Phenol
Phosphorus Oxidechloride

Phosphorus Trichloride
Salicylic Acid Technical
Dinitrochlorobenzene
Orthoanisidine
Orthonitraniline
Orthophenetidin
Paranisidine
Cyclohexylamine

Santomer No. 1...all-purpose detergent and wetting agent

Santomer* No. 1 is the all-purpose detergent and wetting agent. It is a versatile servant that disperses, wets, emulsifies, penetrates, and is high in detergency. As a detergent, Santomer No. 1 has the ability to lift out particles of grime and grease and hold them in suspension so they can be carried away in the rinse. Effective in hard or soft, hot or cold water and in alkaline, neutral or acid solutions, Santomer No. 1 does not form insoluble soap curds, which are detrimental to industries such as textile manufacturing.

AROCLORS put "protection" in protective coatings

Used as plasticizers or resins by many leading manufacturers of modified and synthetic rubber protective coatings, Monsanto Aroclors deliver greater toughness and adhesion... stronger resistance to corrosion, flame, water and weather... greater resistance to acids and alkalis. There probably is an Aroclor* you can use in your paints. Mail the coupon for details.

☆☆☆

MONSANTO CHEMICAL COMPANY, 1704-M South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U. S. Pat. Off.



SERVING INDUSTRY... WHICH SERVES MANKIND

MATERIALS

Extrusion rates of acrylic are high . . .

Plexiglas parts have no bubbles or "fisheyes"; show excellent clarity and gloss

Uses: Production of extruded plastic parts.

Features: Powder is said to give extruded sections of excellent clarity and gloss at high rates of extrusion. It makes possible the extrusion of large Plexiglas sections for use in volume applications or for special cross-section shapes not readily produced by injection molding or fabrication of cast sheets. Parts are free of seed bubbles and "fisheyes."

Description: Acrylic plastic powder is available in crystal-clear and the complete range of molding powder colors.

Any commercial plastics extrusion machine can be used, providing it can be heated to 400 or 450°F. Breaker plates and screen packs are frequently employed just ahead of the die. The plates reduce the swirl pattern produced by rotation of the screw of the extrusion machine.

Dies are usually made 10 to 15% over the size of the finished part to permit stretching of the extrusion down to size and to provide better size control.

Best results are obtained if the powder is pre-dried at 190°F for at least 12 hours prior to extrusion. Pre-drying time may be reduced for thin sections. For extrusions that require close dimensional tolerances, it is important that the temperature of the feed be uniformly maintained. Difficult, heavy-section extrusions may require vacuum drying for completely bubble-free parts.

Adequate temperature controls are necessary to produce extrusions with uniform size and high surface gloss. Although the temperatures will vary on different machines and jobs, cylinder temperatures of 380 to 400°F will generally give satisfactory results. Die temperatures should be controlled independently and are usually within the range of 380 to 400°F also.

As the extrusion emerges from the die, it swells slightly and will require minor stretching to bring it down to size. Stretching should be done while the extrusion is still very hot. The hot extrusion requires support during cooling. Water or air cooled rollers, or smooth metal fixtures, are often used in addition to the usual conveyor belt.

Source: Plexiglas VM (Extrusion Grade) is a development of Rohm & Haas Company, Dept. CP, Washington Sq., Philadelphia 5, Pa. . . or for more information check CP 2084 on handy form, pages 2 & 3.

Offers specialized forms of organic chemicals

Twelve-page price list contains many specialized forms of organic chemicals. Contents include floral absolutes; aromatic chemicals; balsams, gums, and sundries; colors; citrus concentrates; floral concretes; essential oils; animal and resinoid fixatives; floral waters; oleoresins; terpeneless and sesquiterpeneless oils; and tinctures.

Distribution is limited to those who are interested in wholesale quantities. Price List is issued by Fritzsche Brothers, Inc., Dept. CP, 76 Ninth Ave., New York 11, N. Y. When inquiring specify CP 2085 on handy form, pages 2 and 3.

SEND INFORMATION: ☐ Nontoxic Plasticizers. ☐ Isocyanates. ☐ Sterox CD. ☐ Aroclors.

SEND LITERATURE: ☐ Santomer No. 1. ☐ De Nora Mercury Cell. ☐ Technical Bulletin O-70.

SEND SAMPLE: ☐ Sterox CD.

MONSANTO CHEMICAL COMPANY
1704-M South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, material indicated at the left.

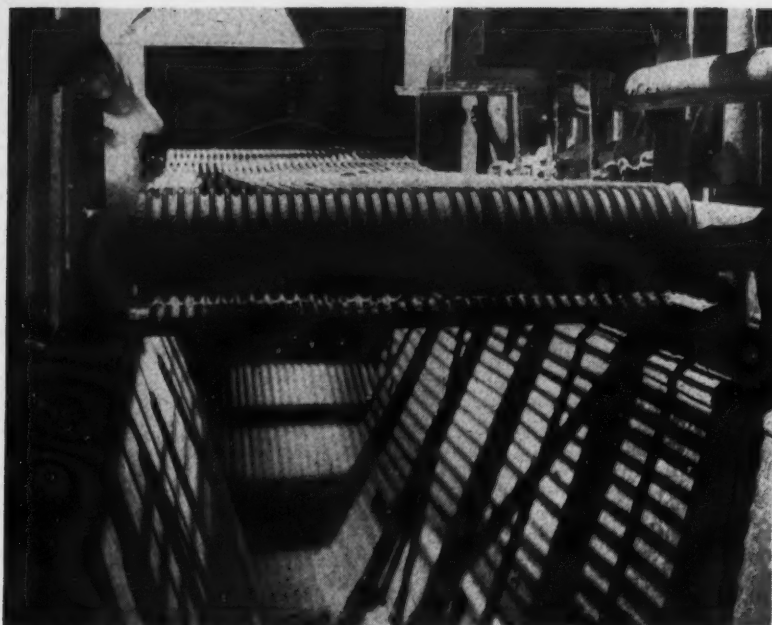
Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

When inquiring check CP 2083 on handy form, pgs. 2-3



End-view of conveyor in Bentonite plant. Hopper collects loose material which falls completely through steel belts

Conveyor Fits Under Bag Packer, Requires Only 7" Clearance

**Action of endless spring belts is self-cleaning
and distributes material in bag evenly**

USES: Especially designed to operate in connection with valve bag packers. Now being used in cement mills, fertilizer plants and firms handling bulk chemicals and similar materials.

Features: Only 7" of head room is required. Bags are cleaned of loose material by fluttering action of conveyor. Design eliminates necessity of placing bag filler on piers to create a clearance for the terminal machinery of the conveyor, or locating bag filling machine on upper floor so that bags can be dropped on conveyor from above.

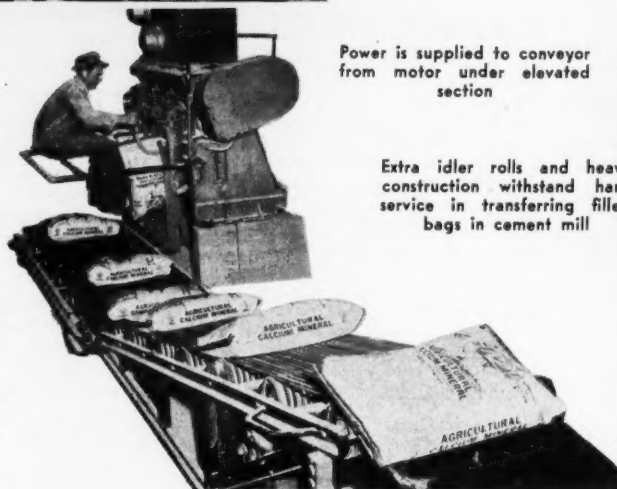
Description: Conveyor embodies a series of endless spring belts running over grooved rollers to form a conveying medium. As the bags ride on the springs and over the grooved rollers, an action takes place that causes the material to be distributed more evenly in the bag. This makes a flatter bag that handles easily and efficiently.

By means of a reversing switch, conveyor can be made to operate in either direction with equal efficiency. Drive gearmotors can be located at any point in the conveyor line.

Conveyor is self-cleaning, as any free material which collects on the outside of the bag or around packer drops through the springs. The open frame construction allows spillage to drop through to the floor, where it can be cleaned up easily.

Once installed, the conveyor may be adapted to changing requirements. Length may be increased by the addition of new sections with no resetting of terminal machinery, splicing belts, modifying structural frame, or resetting motor.

Springs are made of high carbon spring wire. They are well suited to withstanding steady impact of bags dropping from packing machine, or chute. They act as a shock absorber and endure stress fatigue very well.



Power is supplied to conveyor from motor under elevated section

Extra idler rolls and heavy construction withstand hard service in transferring filled bags in cement mill



Standard spring belt is 7/16" diameter and 50" long, with a built-in coupling for making it endless. Each spring forms a belt between two rolls and is so spaced as to allow other rolls on either side to be connected, thus forming a continuous flat conveying element of any desired width and length.

Source: Flexoveyor Mfg. Co., Dept. CP, 1220 South Acoma St., Denver 10, Colo. . . or for more information check CP 2086 on handy form, pages 2 and 3.

Move 3-ton Loads Up and Down Ramps With Super-Tractive Trucks

**Pallet trucks in electric and gasoline driven models
have 14" drive tire, 9 1/2" brake, reserve power**

USES: Handle pallet loads up to 6,000 lb in moving materials throughout plants and up and down ramps.

Features: Unusually short wheelbase and turning radius for trucks of this type is reported, offering great

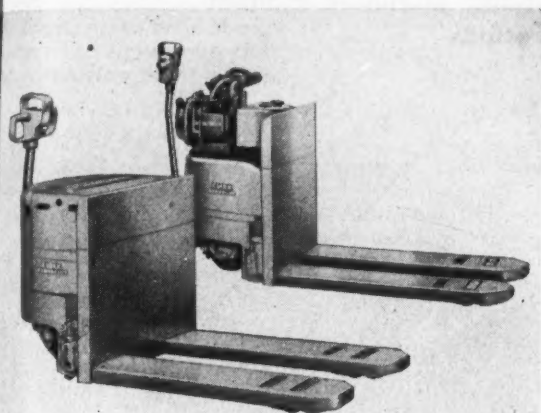
maneuverability. Maximum accessibility of vital parts. All lubrication points are outside. Large 14" drive tire saves floors. Ample underclearance prevents "hanging-up".

Compact hydraulic lift system has pump motor, pump,

erial
elling

reservoir, relief valve and control valve designed in one unit with a single line running to the lift cylinders. In other model, gasoline motor drives hydraulic pump and motor, providing unusually smooth operation.

Description: Made in two power types with same basic design. One is battery-powered with motor drive, the other has gasoline engine, hydraulic pump and motor drive. Battery powered "Electro-Lift" truck is driven by General Electric compound motor, developing 1½ hp. Automatic acceleration prevents overload.



6,000-lb electric & gas powered hand lift trucks

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ing driving motor. Motor is mounted inside 14" drive wheel. Brake is self-energizing, external contracting type.

It is applied to a 9½" diameter by 3" surface on the wheel.

In gasoline powered model, the hydraulic motor is mounted in the same manner as the electric motor, in the 14" drive wheel, with the output shaft driving through a reduction of 32:1 to an internal gear in the wheel. Gas engine drives a hydraulic pump of eccentric vane type with infinitely variable displacement from zero to 15 gpm. Displacement responds automatically to pressure requirements, desired volume of oil increasing as pressure decreases. Pump in turn drives a constant displacement hydraulic motor of vane type with a sequence valve. Hydraulic pressure keeps vanes in contact with the case at low speeds. Motor is described as developing 90% of full torque below 10 rpm.

Engine of gasoline model is 2-cylinder opposed type, air cooled, and rated at 5.5 hp at the governed speed of 2800 rpm. Mechanical governor and fuel pump are standard equipment.

Source: Powered hand lift trucks are built by Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. . . . or for more information check CP 2087 on handy form, pages 2 and 3.

Material handling equipment displayed in catalog

Twenty-four-page catalog describes and illustrates line of material handling equipment — boxes, pallets, and skids. All items are made of corrugated steel. Single units as well as a variety of skid-box-pallet combinations are represented. This line of container-type equipment is believed to be the most extensive available.

Catalog 77 is issued by The Union Metal Manufacturing Company, Dept. CP, Canton 5, O. When inquiring specify CP 2088 on handy form, pages 2 and 3.

NG DECEMBER, 1950

SURE RELIEF for shipping headaches



Pack your product in a Continental steel container

Shipping headaches go away fast when you come to Continental. We can supply you with just the right steel container for every chemical product from anti-freeze to adhesives.

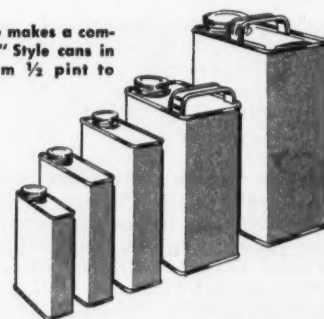
Continental's rugged pails and drums are built to take it. They protect your products during every mile of travel, weather the roughest handling, and come up beaming sales appeal.

There's no question that it is sound salesmanship to put your trademark and sales message on the side of every pail and drum you ship — and the better the lithography, the better the

salesmanship. Continental's master lithographers have the skill and experience to lithograph your steel containers in colors and designs that really sing. Another good sales idea is to standardize the labels of your entire line and give it a family appearance.

Why not check with Continental today and get all the facts about Continental steel containers?

Continental also makes a complete line of "F" Style cans in every size from ½ pint to one gallon.



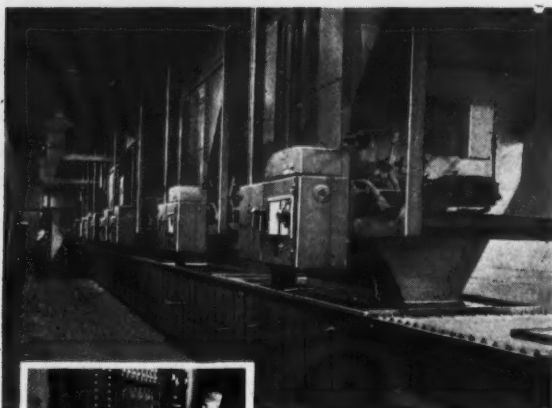
CONTINENTAL © CAN COMPANY

Eastern Division: 122 E. 42nd St., New York 17

Central Division: 135 So. La Salle St., Chicago 3

Pacific Division: Russ Building, San Francisco 4

When inquiring check CP 2089 on handy form, pgs. 2-3



RICHARDSON PROPORTIONING EQUIPMENT WORKS FOR GENERAL ELECTRIC FOUNDRY

PROBLEM:

To provide a system for the automatic or manual control of batching 2000 pounds of sand and core binder every 60 seconds. To coordinate batching machinery with the timed discharge of the automatic scales. To provide infallible electronic and mechanical checks to assure immediate stoppage of cycle when any phase of operation is incorrect.

SOLUTION:

A materials handling system consisting of 9 bins; 8 automatic scales; 1 collector conveyor; 1 swivel spout; liquid meters; master control panel; 2 skip hoists; 2 mullers and reject plows. All weighing and control equipment designed, manufactured and installed by Richardson.

Working together, General Electric and Richardson Engineers solved an intricate problem in materials handling by weight at the Everett, Mass., G. E. Plant. Just as it was extremely important for G. E. to batch sand and core binder correctly and quickly, so it is increasingly essential for all processing industries to proportion accurately and rapidly the ingredients that make up their end product. Only through precise measurement by weight can plant operators be sure of turning out uniform, high quality products that are consistently profitable. And they are consistently profitable because accurate, automatic proportioning of ingredients results in batches of specified weights in minimum time. Costly customer rejects are eliminated.

Richardson Engineers are specialists in materials handling by weight . . . have designed feeding, weighing, proportioning and conveying systems for practically all the processing industries. For any problem in materials handling by weight, look to Richardson for the economical, efficient solution.

Feeder-Weighing Systems of All Types. Automatic Bulk Weighing Hopper Scales, Including Conveyor-Feed Types—Continuous Feeder-Weighers—Automatic Bagging Scales—Bag-Sewing Conveyors—Packers—Process Control Panels. **Branch Offices in:** Atlanta • Boston • Detroit • Minneapolis • Cincinnati • Wichita • Montreal • Omaha • New York • Pittsburgh • San Francisco • Toronto • Buffalo • Chicago • Philadelphia • and Houston.

Richardson

Ⓢ 6317

MATERIALS HANDLING BY WEIGHT

When inquiring check CP 2090 on handy form, pgs. 2-3

Page 36

Fork Truck Raises and Revolves Barrels to Dump Fittings into Stock Bins

Clamp attachments grasp loads; eliminate manual handling in warehouse operations

PROBLEM: Republic Supply Co., Los Angeles, Calif., serves oil well operators and industrial organizations, handling a variety of materials including numerous types of fittings. These are shipped to the company's warehouse in large barrels. It had been the practice to tier such barrels by portable elevators, and to de-tier with the same equipment. A man standing on the platform of the lift "walked" a barrel into place, after which it was lowered and taken to the order area by a two-wheel hoop-type barrel hand truck.

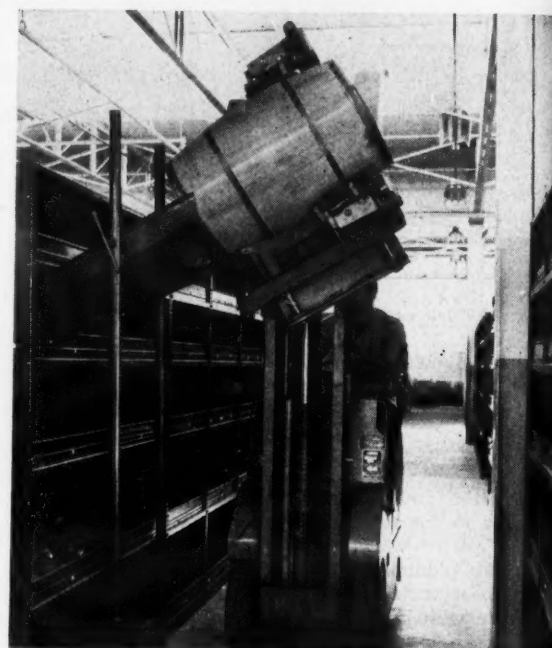
On reaching the order floor, countless fittings were dumped on the floor and then shoveled laboriously into their assigned stock bins.

When it came to planning a new plant building, re-vamping of handling methods was in order, with the matter of moving and storing fittings being the most urgent.

Solution: An industrial truck, fitted with special forks, now lifts, stacks, and empties barrels. Capacity is 2,000 lb. Now, on arrival, barrels are moved from dock to storage area by the fork truck. There they are tiered four high on racks. The same truck brings them to the order floor when they are needed. Barrels are quickly moved to proper bin, raised to bin height, and tilted so that contents are easily "chuted" in without any spillage. Supplies of various fittings are thus always on hand for the order pickers. Forks, on which special clamps are mounted to permit truck to pick up barrels, revolve through 360 degrees.

Other handling operations have also been fully mechanized. Wherever feasible, incoming materials are put on standardized 36 x 48" pallets or in pallet boxes. Unit loads go to storage on 4,000-lb capacity electric fork lift trucks. There, they are tiered up to four high. These trucks also move large loads to dock for shipment.

Results: Fittings are now received at plant, placed in storage, eventually moved to order floor, and put in stock bins without a single manual material handling operation. Man-power is saved, storage space more



Fittings transferred from receiving docks to stock bins without manual handling



Incoming materials are brought to storage by operator-led trucks, tiered by 4,000-lb "high lift" units

CHEMICAL PROCESSING

Materials
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efficiently utilized. Barrel handling truck paid for itself in a short time.

Other mechanized operations with the 4,000 lb trucks have speeded handling and efficient storage of other materials. Elimination of hard manual handling jobs has increased employee safety.

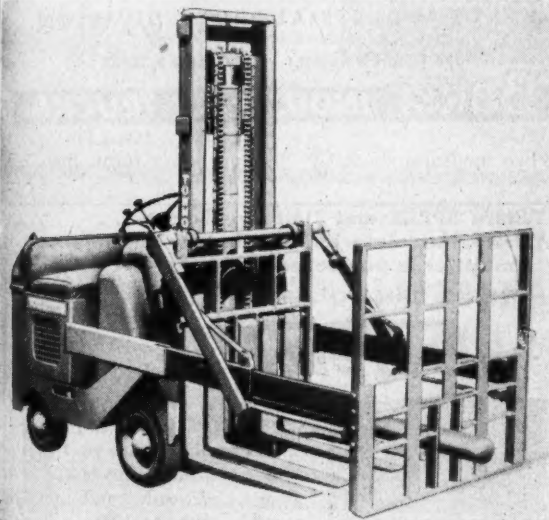
Source: Barrel and pallet handling trucks are built by Automatic Transportation Co., Dept. CP, 149 West 87th St., Chicago 20, Ill. . . or for more information check CP 2091 on handy form, pages 2 and 3.

Pick-up, move coils of wire with truck's special forks or ram attachment . . .

coils are lifted from pallets or from floor; hydraulic pusher deposits loads

Uses: Lifts spools of wire directly on forks from take-it-or-leave-it pallet. By means of ram, group of coils in vertical position is picked-up by inserting ram through center of coils. Coils, whether being carried on forks or ram, are easily deposited by action of unloader device.

Features: Special set of forks are fully tapered and polished. Two outside forks are offset 3" to provide a broad base for handling loads without pallet and to

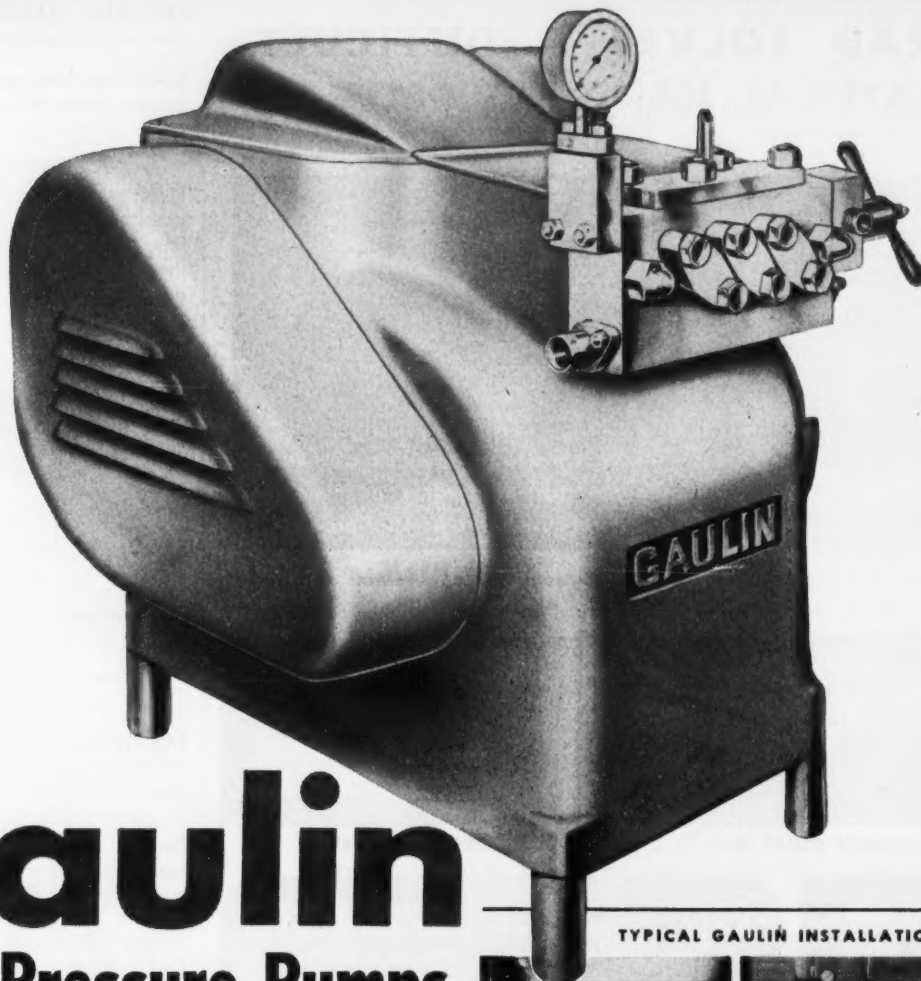


Truck has forks, ram, unloader for handling coiled wire facilitate tight stacking against adjacent loads and box car walls. Forks, ram and unloader are all easily and precisely controlled. Either of the load carrying accessories can be readily attached or removed.

Description: Ram accessory and hydraulic unloader are furnished on truck with special forks with carrying capacity of 2,000 lb at 18" load center. Both the forks and the ram are suspended from fork support bar in usual manner. Unloader pusher screen is constructed so that screen will pass freely over ram in unloading coils of wire from the ram.

When equipped with a 60" ram, capacity is 1,400 lb at 30" load center. In lowered position, top of ram is 12" from floor. Overall lowered height of truck is 95" and height of lift is 132". Stroke of unloader is 49".

Source: Model LT-40 lift truck — equipped with special forks, ram and unloader — is built by Towmotor Corp., Dept. CP, 1226 East 152nd St., Cleveland 10, Ohio . . . or for more information check CP 2092 on handy form, pages 2 and 3.



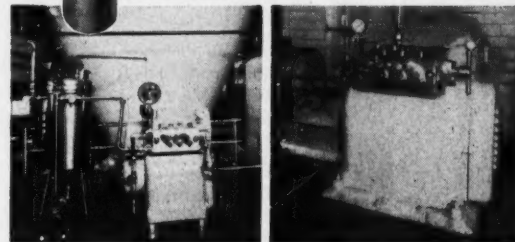
Gaulin

High Pressure Pumps

Keep Materials Flowing

IN THE PROCESS INDUSTRIES

TYPICAL GAULIN INSTALLATIONS



If you want to increase production and cut costs in your processes, then it will pay you to use Gaulin High Pressure Pumps. These rugged, dependable pumps keep materials flowing day in, day out with practically no maintenance expense.

They are available in capacities from 75 to 4000 gallons per hour and operating pressures up to 15,000 lbs. per sq. in. — a size to meet every requirement. All operating parts are designed and built to give maximum performance regardless of operating conditions. Special applications requiring specific metals and types of packing are constructed to meet individual requirements.

It will pay you to investigate and use Gaulin High Pressure Pumps. Write for information, today.



Manton Gaulin Manufacturing Company, Inc.
55 GARDEN STREET, EVERETT 49, MASS.

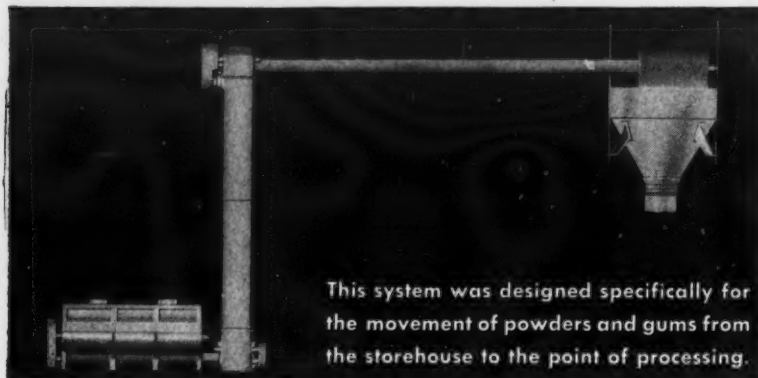
SOME GAULIN HIGH PRESSURE PUMP USERS

Standard Brands, Inc.
Lever Bros.
Buffalo Electro Chemical Co.
Armour & Co.
B. F. Goodrich
Land O'Lakes Creameries, Inc.
Hayden Chemical Co.

Tennessee Eastman
Seagram's Distilleries, Inc.
Borden Company
General Foods
Swift & Co.
Upjohn Co.
Charles Pfizer & Co.

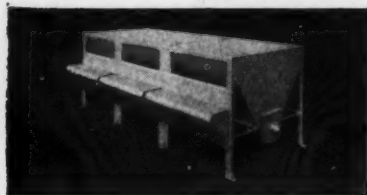
When inquiring check CP 2093 on handy form, pgs. 2-3

READ SOLVES A DIFFICULT MATERIAL HANDLING PROBLEM



This system was designed specifically for the movement of powders and gums from the storehouse to the point of processing.

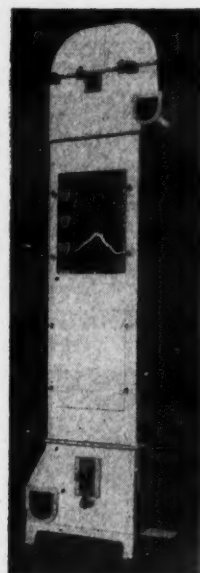
The above Read Material Handling System was engineered and built for a New York chemical company that manufactures adhesives.



PLAIN DUMP BIN



SCREW CONVEYOR

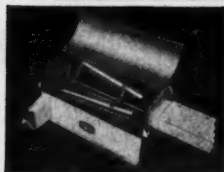


BUCKET ELEVATOR

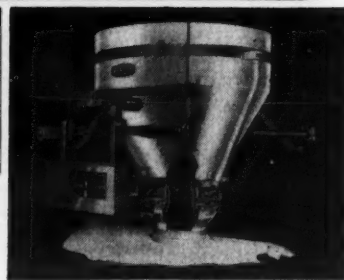
Complete Read Material Handling Systems are "tailored" to meet your particular material and plant requirements. Each system is carefully designed with an eye to lowering processing costs by preventing the loss of material in handling and increasing the efficiency of your overall operation.

In addition, each unit in a Read System is designed and constructed for easy accessibility and cleaning — your assurance of maximum equipment sanitation in your plant.

For a material handling system tailored to solve your particular problems, contact Read. One of our engineers will be glad to study your plant operation and make recommendations without obligation.



CONE SIFTER



WEIGH HOPPER

READ

READ MACHINERY DIVISION
of The Standard Stoker Company, Inc.
YORK 7, PENNSYLVANIA

When inquiring check CP 2094 on handy form, pgs. 2-3

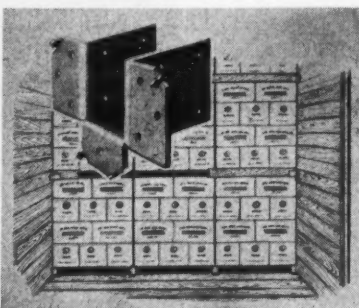
MATERIAL HANDLING

Shipping damage reduced by use of cleats . . .

oblique corner spurs dig in deeper under pressure

Uses: Spur cleats for holding gates and cross bars that secure pallets and unit loads while in shipment.

Features: Oblique corner spurs drive deeper into car siding or floor



Shows use of cleat in box cars

when under pressure.

Description: Spurs are available in variety of sizes to meet specific load requirements. Their use aids in cutting shipping damage.

Source: Peyton spur cleats are made by National Dunnage Company, Dept. CP, 5715 Hudson St., Dallas, Tex. . . . or for more information check CP 2095 on handy form, pages 2 and 3.

Shows mobile conveyor

Heavy-duty, mobile conveyor described in 8-page bulletin moves coal, sand, cinders, chemicals, stone, debris, or scrap at rates from 150 to 425 tons per hour. Lengths are from 33 to 60 feet, with belt width of 18, 24, or 30".

Applications, construction features, and accessories are included in Bulletin 374, issued by Barber-Greene Company, Dept. CP, Aurora, Ill. When inquiring specify CP 2096 on handy form, pages 2 and 3.

Tells ethylene oxide handling methods

Unloading, storage, and handling of ethylene oxide are described in 16-page booklet, which presents procedures for unloading tank cars and handling the new insulated 55-gal drums approved for ethylene oxide by the Bureau of Explosives.

Booklet stresses safety precautions to be used in handling this compound; lists necessary equipment; and presents

BAKER *Light-Weight* LOW COST ELECTRIC FORK TRUCKS

—save money on SMALL HANDLING JOBS!



● Here's the ideal cost-saving solution to the countless "in-between" handling problems where loads are too big for manual hauling, too small for the average industrial truck. The Baker FQH (1000 and 1500 lb. capacity) and Baker FRH (2000 lb.) have been specifically designed to meet this need. They load and unload box-cars and trucks, transport parts or materials between production processes, and high tier pallet loads in storage.

Their light weight admits them where floor or elevator loadings are restricted. Their compact small size and maneuverability are readily adaptable to narrow aisles and congested areas. Their extremely low operating and maintenance costs permit savings on a surprisingly small handling volume. Their low "package" price — including battery and charger — places them in the range of the smallest capital investment budget.

Write for descriptive literature.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Rauland Company

1208 WEST 80th STREET • CLEVELAND 2, OHIO

Baker INDUSTRIAL TRUCKS

When inquiring check CP 2097 on handy form, pgs. 2-3

Where SPACE and TIME are Factors
Where the material handled is cumbersome, moist or in powdered form—

NOTHING CAN DO THE JOB LIKE . . .

Screw-Lift

PATENTED AND TRADE MARK REG. U. S. PAT. OFF.



Above shows a SCREW-LIFT installed in a large Distillery handling mixed pressed cake.

SCREW-LIFT takes no more space than a pipe of comparable diameter. It elevates efficiently and smoothly with no clogging or degradation of material.

Will elevate to any practical height to processing machines, to storage or baggers. Available with top or bottom drives for capacities of 75, 300, 1000 and 2500 cu. ft. per hour.

Write for FORM NO. M-500-2 on which to outline your problem.

Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
TRADE MARK REG. PRODUCTS U. S. PAT. OFFICE

When inquiring check CP 2098 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Trucks that
Save Labor!**

**RIGHT WEIGHT
FOR
EASY HANDLING**

**RIGHT QUALITY
FOR
LONG SERVICE**

SABIN
One-Man
TRUCKS

**BARREL, DRUM AND KEG
TRUCKS; BOX TRUCKS; PACK-
AGE TRUCKS; COIL TRUCKS;
SHOP TRUCKS; TOTE PAN
TRUCKS; Special Trucks.**



Sabin trucks are used extensively in numerous industries and most of our sales come from repeat orders from satisfied customers.

See our complete line —
WRITE FOR BULLETIN NO.
48.

The Sabin Machine Co.
6534 Carnegie Avenue
CLEVELAND 3, OHIO

BARREL TRUCK. One man easily handles drum and barrel loads weighing up to 800 pounds.

When inquiring check CP 2099 on handy form, pgs. 2-3

CESCO DUMPER HANDLES BAGS, DRUMS AND BULK

MULTI-PURPOSE DUMPERS for dumping bags, bulk or drums, as well as single-purpose types save handling time and reduce accidents. Dumping heights range from 5 to 12 ft. Special sizes made on order. Have lifting capacity of 500 lbs.; handle up to 100 loads per hr. 1/2 H.P. motor controlled by push button. Immediate delivery. Write for 8-page catalog.



**DEALERS
IN ALL
SECTIONS**



COLSON EQUIPMENT & SUPPLY CO.

1321 WILLOW STREET • LOS ANGELES 13, CALIFORNIA

When inquiring check CP 2100 on handy form, pgs. 2-3.

DECEMBER, 1950

MATERIAL HANDLING

physical properties, explosibility limits, toxicity, and other technical data.

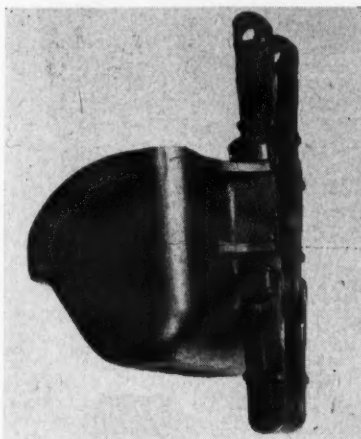
Booklet F-7618 is issued by Carbon and Carbide Chemicals Div., Union Carbide and Carbon Corp., Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2101 on handy form, pages 2 and 3.

Single link of chain cast integrally with elevator bucket . . .

bucket cannot loosen or fall off
Uses: Buckets for bucket elevators.

Features: Bucket is cast integrally with single link of chain. Unit can not fall off or loosen, and is no more expensive than equivalent separate bucket and chain link.

Description: No raised surfaces or bolt heads to retard discharge of load. Made of heat-treated alloy steel for extreme durability; front



Link of chain is cast integrally with alloy steel bucket

edge and corners are reinforced. Bottom is flat to prevent arching. Available in 5 standard sizes — 8 x 5", 10 x 6", 12 x 7", 14 x 7", and 16 x 8" — with other sizes furnished to suit requirements.

Source: Uni-Cast buckets are made by Beaumont Birch Company, Dept. CP, 1505 Race St., Philadelphia 2, Pa. . . or for more information check CP 2102 on handy form, pages 2 and 3.

Safe use of slings

Illustrated card gives tips on proper care and use of slings for safe handling. Card 50-38 is issued by Macwhyte Company, Dept. CP, Kenosha, Wis. When inquiring specify CP 2103 on handy form, pages 2 and 3.

Stuffing Box Under Suction Pressure Only...



Makes the
MORRIS
Type "R"
the Most Trouble Free
Slurry Pump

This is the pump with the deep stuffing box under suction pressure only. Entrance of grit into stuffing box is minimized — slurry dilution from stuffing box leakage negligible. The pump requires only nominal sealing water pressure, yet can operate under high vacuum as well as high suction heads. Because of this design, stuffing box troubles are practically eliminated.

The Morris Type "R" — built for handling refuse, sludge, tailings, concentrates, coal, ore and other mineral slurries — can be used to advantage in both non-metallic and metallic mines and mills. For long term efficiency and economy — and a minimum of maintenance and shutdowns — specify Morris Type "R" Slurry Pump.

**MORRIS
MACHINE WORKS**

Baldwinsville, N. Y.

**FREE TECHNICAL
SERVICE**

Free technical consultation with Morris engineers at your request. For further information write today for Bulletin #181.

MORRIS Centrifugal Pumps

When inquiring check CP 2104 on handy form, pgs. 2-3

STOP THIS

WITH A Standard UTILITY BELT-VEYOR

LIFT OR LOWER—FLOOR TO FLOOR OR CONVEY HORIZONTALLY

MOVE boxes — cartons — crates — sacks and bundles from basement to first floor, or any floor to floor, or convey in a straight line — continuously with the Standard UTILITY BELT-VEYOR. A compact, pre-engineered unit, easy to install (over existing stairways where practical) handles commodities up to 150 lbs. — available in 4 belt widths — 10, 14, 20 and 24 inch — and equipped with adjustable guard rails to facilitate handling packages wider than belt. Electric motor operated. Write for Bulletin CP-120.

Standard Conveyor Company
North St. Paul
Minnesota
Sales and Service in
Principal Cities

Standard
GRAVITY & POWER
CONVEYORS

When inquiring check CP 2105 on handy form, pgs. 2-3

BIN-LEVEL CONTROLS

2 BIN-DICATORS
Often Replace 1 Man

BIN-FLO
Aerating Units Keep
Finely-Ground
Materials
Moving

ECONOMICAL MATERIAL CONTROL

DEPENDABLE BIN-LEVEL INDICATION

Mail This Coupon

THE BIN-DICATOR CO., 13946 Kercheval, Detroit 15, Mich.

Please send new 20-page catalog giving complete information and specifications on BIN-DICATORS. Also please send information on BIN-FLO Aerating Units.

Name _____ CP-12

Address _____

City _____ Zone _____ State _____

When inquiring check CP 2106 on handy form, pgs. 2-3

MATERIAL HANDLING

Up to 20,000 pounds lifted by crane and monorail system

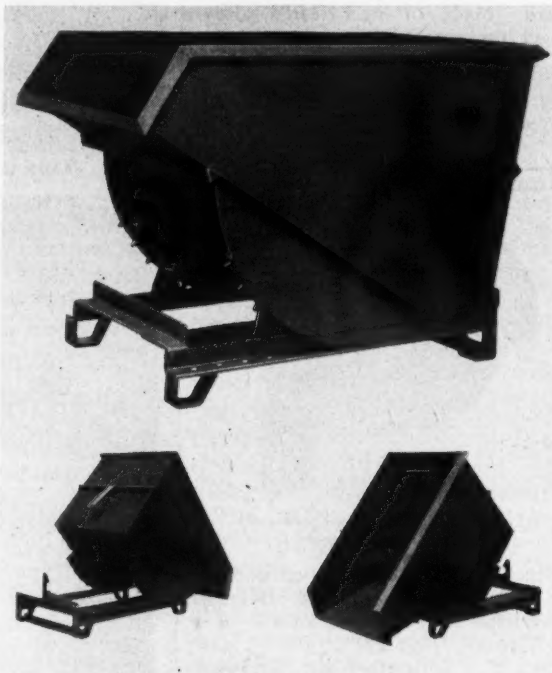
Twenty-page, fully illustrated bulletin shows crane and monorail system that is especially designed for handling loads from 250 to 20,000 lb. Bulletin is not intended to give technical details; it is merely a summary of how and where system can be economically used. Bulletin M-20 is issued by Whiting Corporation, Dept. CP, Harvey, Ill. When inquiring specify CP 2107 on handy form, pages 2 and 3.

Rocker, geared to track, tilts lift truck end dump smoothly; locks during loading . . .

handles stampings, castings, scrap, heavy materials
Uses: For handling and dumping sand, castings, scrap, stampings, and various heavy materials.

Features: Smooth, simplified dumping is provided by easy-operating rocker geared to track.

Description: Can be built for lift or fork trucks and with casters for easy mobility around machinery and



Lift truck end dump

through narrow aisles. All-welded construction is of heavy plate steel reinforced with heavy angles.

Source: Automatic end dumps are built by Palmer-Shile Co., Dept. CP, 16016 Fullerton Ave., Detroit 27, Mich. . . . or for more information check CP 2108 on handy form, pages 2 and 3.

One cubic yard is capacity of tractor shovel attachment

Combination overhead and front-end shovel attachment is described and illustrated in 8-page bulletin. Shovel fits International Harvester tractors, and has maximum capacity of 1 cubic yard. Dirt or load is gouged out, swung backwards overhead, and dumped. Overhead

Lift King TRUCK DRIVES LIKE A CAR...



gives you better handling by far

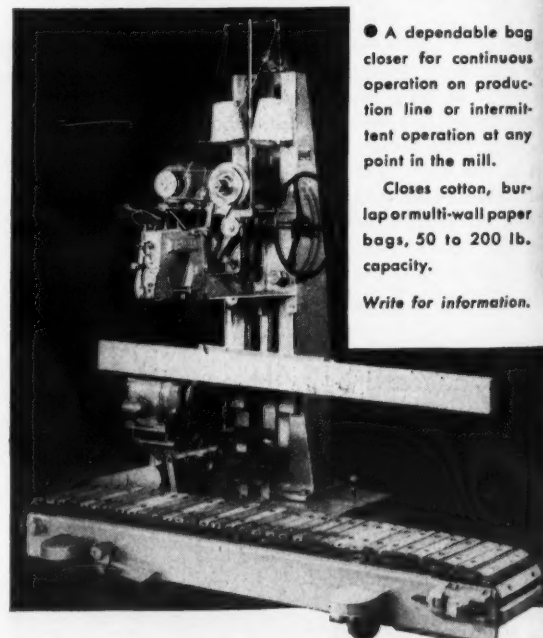
- ✓ Smooth, Vibrationless Fluid Drive
- ✓ 130" lift . . . 66" free lift
- ✓ Powerful 65 HP engine . . .
- ✓ Duplex Hydraulic hoisting unit
- ✓ Hypoid Drive power axle
- ✓ Automotive controls
- ✓ Automotive acting hydraulic brakes
- ✓ Cleated, ground-gripper tires
- ✓ Capacities to 10,000 lbs.

Write for literature.

YALE THE YALE & TOWNE MANUFACTURING CO.
Roosevelt Boulevard • Philadelphia 15, Pa.
HAND LIFT AND POWER TRUCKS • HAND AND ELECTRIC HOISTS • INDUSTRIAL DIAL SCALES

When inquiring check CP 2109 on handy form, pgs. 2-3

FAST, FLEXIBLE, HEAVY DUTY BAGGER CONSOLIDATED Model 105



● A dependable bag closer for continuous operation on production line or intermittent operation at any point in the mill.

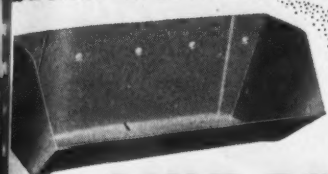
Closes cotton, burlap or multi-wall paper bags, 50 to 200 lb. capacity.

Write for information.

CONSOLIDATED PACKAGING MACHINERY CORP.
BUFFALO 12, N. Y.

When inquiring check CP 2110 on handy form, pgs. 2-3

IVE **Modernize your
bucket elevators with**



LINK-BELT "HS" High Speed Buckets to obtain more capacity at higher operating speeds

Correctly designed for:

- + Maximum pick-up and carry with minimum spillage
- + Clean, quick discharge
- + Uniform strength throughout
- + Durability with minimum weight
- + Proper balance on belts or chains

LINK-BELT COMPANY
Chicago 8, Indianapolis 6, Philadelphia 40,
Atlanta, Houston 1, Minneapolis 5, San Fran-
cisco 24, Los Angeles 33, Seattle 4, Toronto 8.
Offices, Factory Branch Stores and
Distributors in Principal Cities. 12,200



Send for Book 2299

When inquiring check CP 2111 on handy form, pgs. 2-3

BELTING BUILT FOR THE TOUGH JOBS



**HEWITT-ROBINS Belting
Lasts Longer . . . Costs Less!**

When trouble comes by the ton, the easiest, most dependable, most economical way to move it is on a Hewitt-Robins conveyor belt.

Today engineers the world over instinctively specify Maltese Cross® where the going is really tough, Ajax® for general service, and Conservo® for light work and portable conveyors. For Hewitt Rubber belting is protected against moisture,

oils, flexing, and ply-separation. Maximum strength plus flexibility are assured through extra-tough rubber covers, heavily textile-reinforced.

For details on belting—or for entire belt conveyor systems—write Hewitt Rubber Division, Buffalo 5, N. Y.

**HEWITT-ROBINS
CONVEYOR BELTING**

HEWITT-ROBINS INCORPORATED



When inquiring check CP 2112 on handy form, pgs. 2-3

DECEMBER, 1950

MATERIAL HANDLING

operating height is 14' 9". Elimination of 2 turns every cycle reduces wear, saves half the travel distance.

Bulletin contains specifications and photographs of equipment in actual use. Many accessories are listed. Bulletin LO 200 is issued by Manufacturing Division, Service Supply Corporation, Dept. CP, Philadelphia 32, Pa. When inquiring specify CP 2113 on handy form, pages 2 and 3.

Double and triple decking of pallet loads easy for fork type elevators . . .

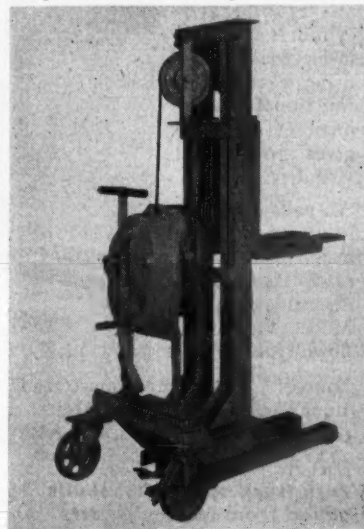
hand or electrically operated units made in 2,000, 3,000, 4,000, or 5,000 lb capacities

Uses: For double and triple decking of single-faced pallet loads by hand or electricity.

Features: Pallet loads are lowered safely, gently onto load below it. Various safety provisions protect operator.

Description: Offered in hand or electrically operated models. Operation requires a minimum of time and physical effort. Operator guides forks (lowered height, 3½") under the pallet and cranks load up to desired height. Elevator is then run to load resting on floor. Opening brake lowers pallet load. Unit pictured is for double decking

only and has no hinge as does the model designed for triple-decking. Double-decking unit height is 6', 6" with lifting height of 4', 2". Triple-decking units are built to any height required. Hinge permits unit to pass under overhead obstructions when collapsed.



Double-decking pallet elevator

Hand operated unit has two speeds, governor control, and spur gears enclosed and running in oil. Electric models are ball bearing equipped and have cable control, electric solenoid brake, thermal overload switch, top and bottom limit stops, and 25' of electric cable.

Capacities of 2,000, 3,000, 4,000 or 5,000 lb are available.

Source: Fork type pallet elevators are built by Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. . . or for more information check CP 2114 on handy form, pages 2 and 3.

Describes lifting equipment

Illustrated bulletin specifies equipment for vertical movement in both storage and production operations. Contents also include installation photos of many interesting machines built for specific applications. Bulletin 28 is issued by Lewis-Shepard Products, Inc., Dept. CP, 258 Walnut St., Watertown 72, Mass. When inquiring specify CP 2115 on handy form, pages 2 and 3.

the call for MULTIWALL is the call for FULTON

Fulton is now a recognized factor in the manufacture of quality Multiwall Paper Bags. Orders received from the largest users in many industries have been executed to the complete satisfaction of the buyers.

We are very proud of the confidence shown in our company by those who have favored us with orders for bags. We will spare no effort to continue producing the kind of bags that will keep these names on our books for many years to come.

Our new modern plant in New Orleans is equipped to produce all types of Multiwall Paper Bags. Give us a call on your next order.

Fulton BAG & COTTON MILLS

Atlanta • St. Louis • Dallas • Kansas City, Kans.
Denver • Minneapolis • New Orleans
Los Angeles • New York City

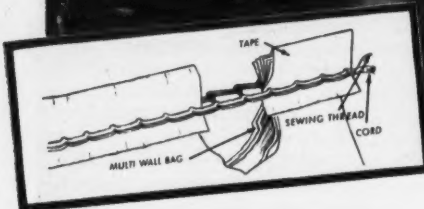
FULTON MAKES YOUR STYLE MULTIWALL PAPER BAG:

SEWN VALVE WITH TUCK-IN SLEEVE . . . SEWN VALVE
SEWN VALVE WITH I.C. SLEEVE . . . PASTED VALVE
PASTED OPEN-MOUTH . . . SEWN OPEN-MOUTH

When inquiring check CP 2116 on handy form, pgs. 2-3

Tape-Bound Closures for Multiwall Paper Bags!

**LOW-COST
SECURE
FAST**



UNION SPECIAL Style 21800 H Bag Closing Machines, with Style 80600 H sewing heads, shown here, are heavy-duty, high production units for making low cost tape-bound closures on large multiwall paper bags.

A single foot pedal controls synchronized conveyor and sewing head. Automatic tape cutter on sewing head saves time and helps make operation smooth and easy to learn.

Sewing head and conveyor are quickly adjustable for varying bag heights and scale or platform height from floor. Entire unit is ruggedly built for dependable service in high-volume production.



Ask for a copy of this Bulletin

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Twenty-five different styles of machines! Ten styles of sewing heads! Wide choice of conveyors, controls, and types of closures. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."

Union Special MACHINE COMPANY
442 N. FRANKLIN STREET, CHICAGO 10, ILLINOIS

When inquiring check CP 2117 on handy form, pgs. 2-3

MATERIAL HANDLING

Elimination of gear shifting simplifies fork truck's operation . . .

feature allows operator to concentrate on control and positioning; reduces accidents, fatigue

Uses: Fork trucks with 2000-lb capacity.

Features: Gear shifting is eliminated, permitting operator to concentrate on controlling truck and positioning load. Accidents and operator fatigue are reduced.

Description: Powered by 3-cylinder, air cooled engine with 3" bore and 3½" stroke. Optimum rpm: 2500. Hydraulic tilt mechanism operates cylinders located inside frame above drive wheels; this functional placement of cylinders gives increased visibility.

All parts are readily accessible for maintenance. Model E fork truck is stand up type; Model ER is sit-down type.

Source: Both models are made by Mobilift Corporation, Dept. CP, Portland, Ore. . . or for more information, check CP 2118 on handy form, pages 2 and 3.

Fork truck operators' skulls saved from falling objects

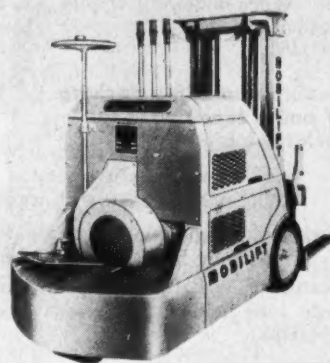
Two-page data sheet introduces overhead guard for maker's line of fork trucks. Guard provides truck operators with protection from objects that may fall from load being lifted. Made of steel pipe, guard resembles an inverted basket. "Overhead Guard" is issued by Towmotor Corporation, Dept. CP, 1226 E. 152nd St., Cleveland 10, O. When inquiring specify CP 2119 on handy form, pages 2 and 3.

Unloads aggregate from hopper bottom cars at rate of 5 ton/min . . .

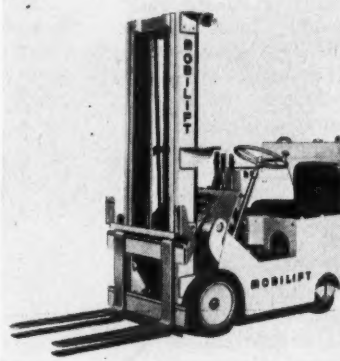
combination of belt with positive chain drive operates unloader smoothly under hard service

Uses: Unloads aggregates, sand, gravel, crushed stone, coal, coke and similar material from hopper bottom cars, handling up to 5 tons per minute.

Features: Combination of belt with positive chain



Model E fork truck



Model ER fork truck

YOU CAN'T AFFORD TO OVERLOOK
THE Styl-O-Matic
STRAIGHTLINE UNSCRAMBLING TABLES



IF YOU USE TUMBLER, FLASK, ROUND, CYLINDER, OR ODD SHAPE CONTAINERS

The Straightline Unscrambler can handle nearly all types of containers which are now in use.

For full information of containers which can be handled write regarding your problem, or send for Bulletin F26-1A.

ISLAND EQUIPMENT CORP.

27-01 BRIDGE PLAZA NORTH

LONG ISLAND CITY 1, N. Y.

When inquiring check CP 2120 on handy form, pgs. 2-3



TIGHT LIPS
Prevent
CONTAMINATION

BLAW-KNOX Chemical and Fertilizer Buckets are equipped with tight fitting cast chrome nickel molybdenum alloy steel lips to resist abrasion and prevent leakage of granular fines. Write for Bulletin 2236 for details about sealed anti-friction lever arm sheave bearings and other important features.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2076 Farmers Bank Building, Pittsburgh 22, Pa.

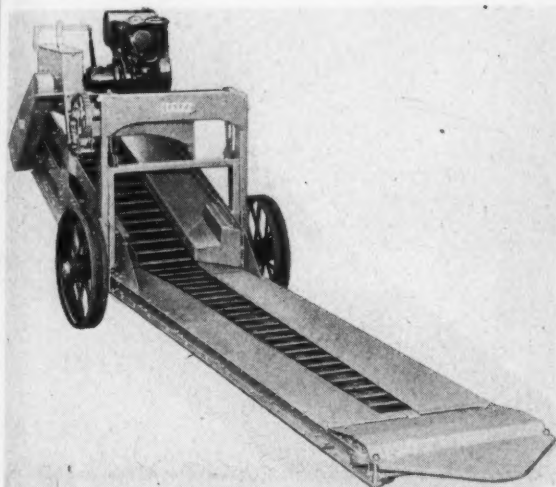
BLAW-KNOX CLAMSHELL BUCKETS
FOR CHEMICAL AND FERTILIZER PLANTS

When inquiring check CP 2121 on handy form, pgs. 2-3

MATERIAL HANDLING

drive for rugged service. Steel skirt plates, with flexible gum rubber flashing strip, eliminate seepage of material to inside of belt or chain. Drive from electric motor or gasoline engine is through a fully enclosed dust tight, oil-bath reducer unit. Anti-friction bearings, steel tooth sprockets and finished steel roller chain are used throughout.

Description: Frame is structural steel with horizontal section of 4" channel construction. Elevating section is of steel plate and angle construction, detachable from horizontal section. Drag chains are #188 combination steel and malleable iron, ultimate strength 14,000 lb



Unloads aggregates, sand, from hopper bottom cars

per strand. Speed 90' per minute; the 12" diameter steel traction wheels, bronze bushed, direct chains at break from horizontal to elevating section of this sturdy unloader.

Belt is 24" wide, rubber-covered, 4-ply, 28-oz duck, protected by full width, closely spaced 1 x 1/4" steel flights. Raising and lowering is accomplished through multi-strand lifting and lowering cables on 4" channel mast easily operated through gear and pinion with safety pawl. For permanent, radial pit, or rigid installation, lifting mast is eliminated. Mounting can be either on steel wheels or pneumatic tired wheels. Weight is approximately 3,400 lb with gas engine; 3,100 lb with electric motor.

Source: Model 501 combination chain and belt hopper bottom car unloader is built by George Haiss Mfg. Co., Inc., Div. Pettibone Mulliken Corp., Dept. CP, 141st to 144th St. on Park Ave., New York 51, N. Y. . . . or for more information check CP 2122 on handy form, pages 2 and 3.

Insides of steel containers protected by linings

Linings for steel drums and pails are described in 12-page booklet. Applications are in packaging animal and vegetable oils and fatty acids, oil refining products, strong solvents, and such miscellaneous products as soaps, stains, water-thinned paints, resins, paint and varnish removers, formaldehyde, and acids.

"The Inside Story of Protective Linings for Steel Containers" is issued by The Glidden Company, Dept. CP, 11001 Madison Ave., Cleveland 2, O. When inquiring specify CP 2123 on handy form, pages 2 and 3.

1,000,000 FINGERS*

that will
work forever

They're specialized fingers that work only on the separation of magnetic substances — they keep iron out of substances in process . . . protect machinery against damage . . . prevent fires and explosions caused by iron sparks . . . they catch iron on the fly and hold it fast!

ONE MILLION fingers able and willing to do a *real* iron removal job. It's the DINGS PERMA-PLATE MAGNET and its cost is very low. Think . . . how many places can you take advantage of a labor force like this! This force will work for you forever because the Perma-Plate is NON-ELECTRIC, guaranteed PERMANENT.

Other Qualifications:

The Perma-Plate Magnet handles solids or liquids, withstands high temperatures, and can be installed anywhere. Its magnetic strength is *certified*. There is a size and strength ideal for any job you have in mind. Get details now.

*That's the approximate number of lines of force emanating from the surface of a Dings Type II 30" wide Perma-Plate Magnet.

Send for
the Perma-Plate
Catalog, IT'S
THE MODERN
WAY TO SEPA-
RATE IRON,
Today.



DINGS MAGNETIC SEPARATOR CO.

4731 W. Electric Ave., Milwaukee 16, Wis.

World's Largest Exclusive Builders of Electric
and Non-Electric Tramp Iron Magnets



YOU WON'T SAY
"DANG IT"
IF YOU
"DING" IT

When inquiring check CP 2124 on handy form, pgs. 2-3



**GOOD NEWS
For VACUUM
USERS!**

A New Vacuum Pump

You're Looking At The **NEW KINNEY
VACUUM PUMP MODEL CVD 3534**. A
Small Pump For Big Results! Here's What
This Compound Vacuum Pump Gives You:

★ Free air displacement of 4.9 cu. ft. per min. (139 liters per min.) . . . operates with 1/3 HP motor.

★ McLeod gauge absolute pressure readings of 0.1 micron (0.0001 mm Hg.) or better.

★ "Flick-switch" readiness . . . no hand starting or "warm-up" problems. Just flick the switch and Model 3534 is in operation.

★ The same consistent performance and long-lived efficiency that have made Kinney Pumps famous in all phases of low pressure processing.

See how Model CVD 3534 can save you money in power, processing time, and upkeep costs. Write for new Bulletin V50-A. Kinney Manufacturing Co., 3573 Washington St., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle.

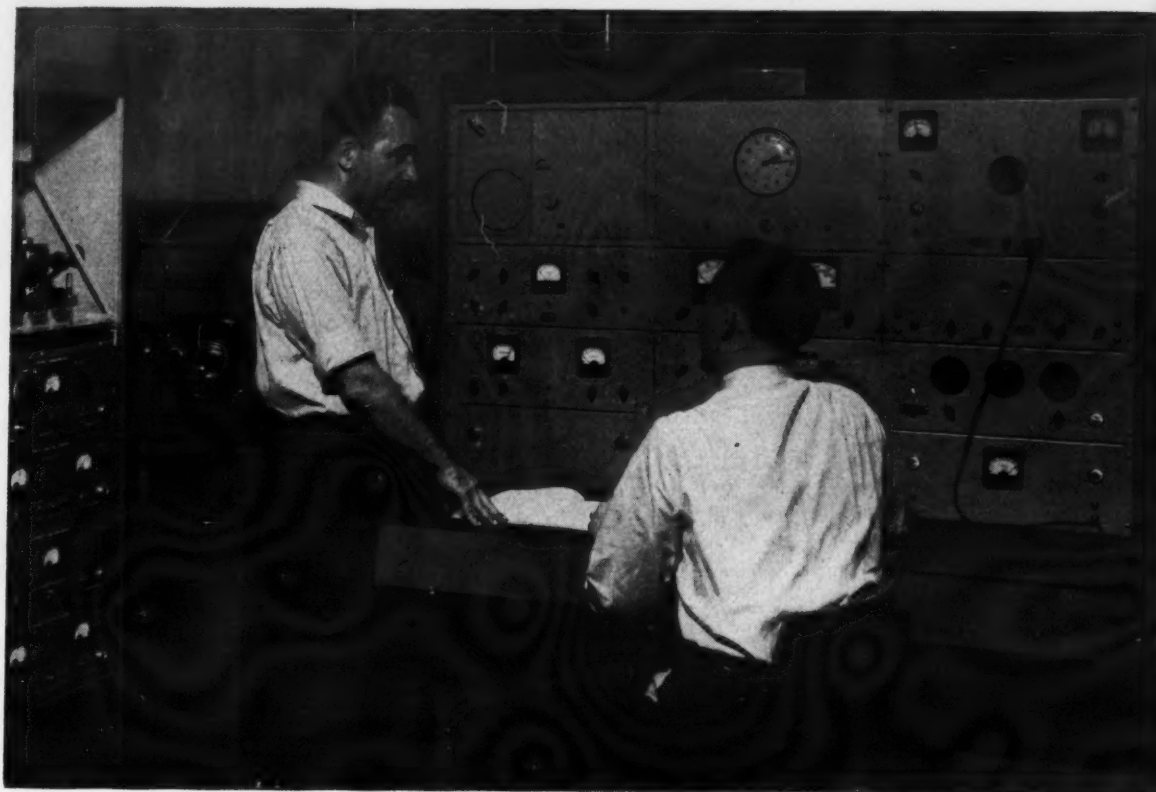
Foreign Representatives: General Engineering Co. (Radcliffe) Ltd., Station Works, Bury Road, Radcliffe, Lancashire, England . . . Horrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia . . . W. S. Thomas & Taylor Pty., Ltd., Johannesburg, Union of South Africa . . . Novelectric, Ltd., Zurich, Switzerland . . . C.I.R.E., Piazza Cavour 25, Rome, Italy.

MAKING OLD THINGS
BETTER
MAKING NEW THINGS
POSSIBLE

**KINNEY
Vacuum
Pumps**



When inquiring check CP 2125 on handy form, pgs. 2-3



Mass spectrometer installation at the Institute of Gas Technology, Chicago

Gas Industry's First Mass Spectrometer Promises Faster, More Accurate Gas Analyses

**Improved instrument at the Institute of
Gas Technology in Chicago has never
been installed before, anywhere**

MASS spectrometer recently put into operation by the Institute of Gas Technology, Chicago, Illinois, represents two interesting *firsts*. It is the gas industry's first mass spectrometer, and the first Model 21-103 instrument ever installed. Model 21-103 is a recent development and improvement over its predecessors. Although no results of its operation are available at present, Dr. Sidney Katz, Supervising Physical Chemist of the Institute, reports that the instrument will provide faster and more accurate analyses of complex gases than has been possible to date with existing equipment.

For the gas industry, the mass spectrometer will supplement the analytical ranges of the Orsat apparatus, infrared and ultraviolet spectrometers, and fractionation-type analyzers, but will not replace any of these. Each will continue to find its own application for reasons of economy, convenience, scope, etc.

Gases and volatile liquids containing as many as 20 constituents, whose individual molecular weights do not exceed 395-400, can now be analyzed. Where more complex mixtures are to be handled, they can be fractionated and the fractions analyzed by mass spectrometry. Individual constituents of those gases formerly reported as "illuminants" can now be determined. Nitrogen can be identified directly rather than by difference. Unusual mixtures such as "Q" gas, the argon-nitrogen mix used in radio-activity-detection devices, may now be accurately analyzed. Trace impurities in mixtures will be detectable.

While the Orsat apparatus requires sample volumes of the order of 200cc, the mass spectrometer needs only 0.1cc (1 to 2cc is easier to handle, however). This fact will be a great asset where only small samples are available and also where samples are shipped long distances for analysis.

Mixtures which cannot be analyzed in a practicable time by an other methods can be handled by the mass spectrometer. Time required for a complete spectrum analysis is reduced to about 10 minutes. Interpretation of data, however, is a more tedious task. Here, the Institute will employ a 12-place electrical analog computer (also made by manufacturer of Model 21-103) to speed these mathematical computations.

Dr. Katz points out precise yet as it will the fact that few stars established to date problems. The Institute procedures. It is further applications to the gas threshold stage.

Minute amounts of accurately determined other constituents. also offers unusual accuracy detected is representative scale. This permits accuracy.

Essentially, the mass which records the molecule in a gaseous compound is introduced into bombarded with electrons converts the chemical to ions of various mass. Ions are then accelerated the attraction of an electric field through a 180° semi-circle which deflects ions so they are made to Here they are amplified.

As stated, Model 21-103. An entirely new ion source steel analyzer tube and analyzer tube, and gas. Resolving power has mass 400. More improved during operation. lower mass ranges, provide optimum shape, yet can be high-mass work or for expression of metastable spectrum and facilitate constituents.

Mechanically, the shifting, minimizes pressure reduces or eliminates source is readily demountable filament can be easily Temperature control an improved circuit.

A new sample introduction Model 21-103. Its stainless steel and incorporate Direct measurements (microns) are made which is unaffected Reduction of "background" problems has been a check grease.

Institute of Gas Technology is affiliated with Illinois 21-103 Mass Spectrometer solidated Engineering, Lake Ave., Pasadena check CP 2126 on hand

White pills preferred
That once familiar phrase holds true any more. finding is based on evidence date has produced 29 Report.)

points out that the mass spectrometer is not as fast as it will be. This, he says, is partially due to the fact that few standard, approved procedures have been developed to date for its application to gas industry. The Institute will work to achieve accepted procedures. It is further pointed out that mass spectrometers used in the gas industry are at present only in their early stages.

Amounts of one or more constituents can be accurately determined in the presence of large quantities of other constituents. The mass-spectrum chart produced is of unusual accuracy. Quantity of each constituent is represented by 4 curves, each on a different scale. This permits selecting the scale offering the greatest accuracy.

Model 21-103, the mass spectrometer is a "molecule sorter" which records the mass and quantity of each kind of molecule in a gaseous composition. Sample under investigation is introduced into an evacuated chamber where it is ionized with electrons from a glowing filament. This ionizes the chemically different molecules of the sample into ions of various masses, each bearing an electrical charge. The ions are then accelerated toward an electrometer tube by the action of an electric field. They are finally moved through a 180° semicircular path by a magnetic field which deflects ions of different mass by a definite amount. Ions are made to fall successively on a collector plate. The signal is amplified and recorded as a "spectrum".

Model 21-103 embodies certain improvements. It features a new ion source — the Isatron — and a stainless steel analyzer tube replace previous ionization chamber, glass tube, and glass envelope.

Power has been increased, extending range to 150. More important, resolving power can be adjusted for operation. Thus, for normal operation in the lower ranges, the resolving power can be set to optimum scanning speed, sensitivity, and peak resolution. It can be quickly readjusted by dial setting for work on CO₂ and propane. Suppression of metastable ions is possible, permitting a cleaner spectrum and facilitating identification of unknown compounds.

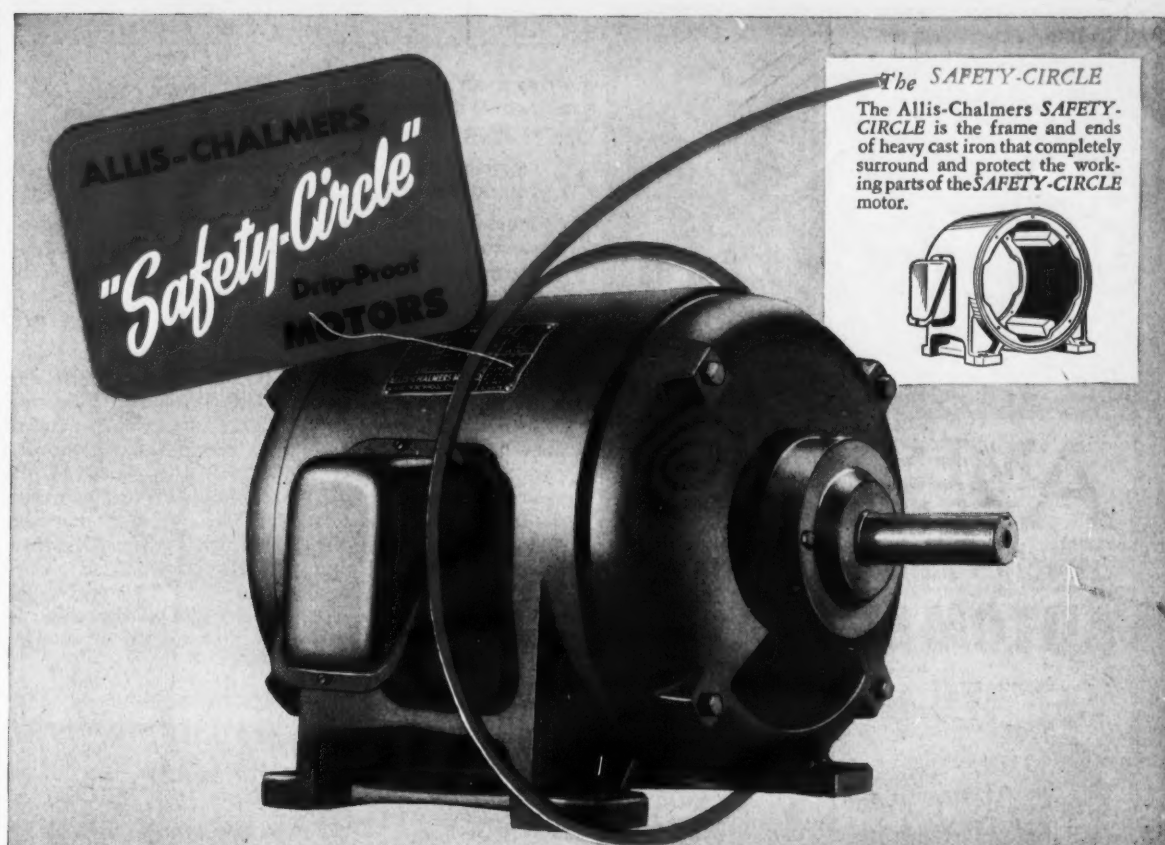
Finally, the new ion source eliminates alignment problems, minimizes possibilities for electrical leakage, and eliminates other causes of instability. Ion source is readily demountable from the analyzer, and its replacement can be easily replaced to simplify maintenance. Control for the ion source is maintained with a separate circuit.

A sample introduction system is incorporated in Model 21-103. Its main body is machined from stainless steel and incorporates metal valves as an integral part. Measurements of sample pressures (0.1 to 150 microns) are made with an electronic micromanometer unaffected by composition of gases under test. Elimination of "background" contamination and absorption has been achieved through elimination of stopcocks.

Gas Technology, 17 W. 34th St., Chicago, Ill., in connection with Illinois Institute of Technology. Model 21-103 Mass Spectrometer is a development of the Con-Engineering Corporation, Dept. CP, 620 N. Hollywood Blvd., Pasadena 4, Calif. . . . or for more information write to Dept. 126 on handy form, pages 2 and 3.

is preferred

A familiar phrase, "pink pills for pale people," hardly needs any more. People really prefer white pills. This is based on estimate of a pharmaceutical firm which has produced 29 billion pills. (As told in The Merck



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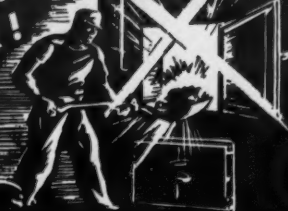
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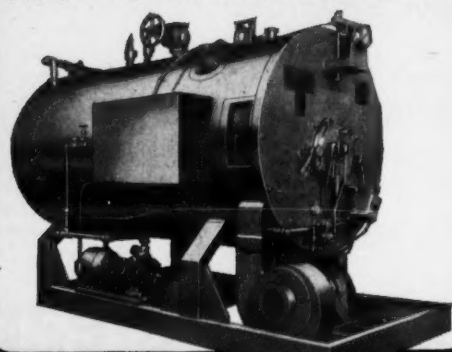
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IDEAS

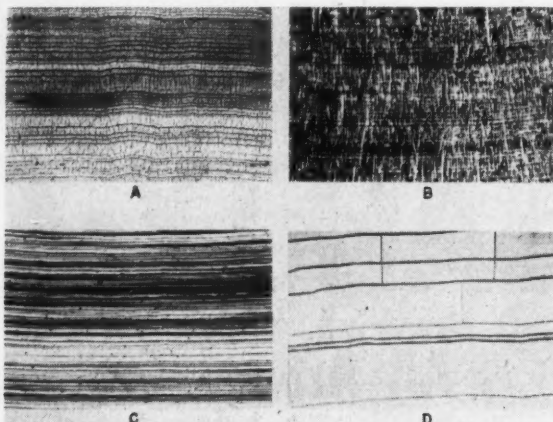
**Alloys of phosphorous-nickel
or cobalt deposited with more
ease than chromium . . .**

develop commercially feasible method to make hard surface or decorative finish

A commercially feasible method for producing electro-deposits of cobalt or nickel, alloyed with as much as 15% of phosphorus, has been developed. These are more easily deposited than chromium and are very hard, corrosion-resistant, and bright. They provide a wear resistant surface or a decorative finish.

Plating baths for depositing the phosphorus alloys are rather simply prepared, consisting of common nickel or cobalt salts (such as sulfate or chloride) to which is added phosphorous acid as a source of phosphorous in the deposit. Baths are operated at a low pH — between 0.5 and 1.5, depending on composition. To maintain the desired acidity in the cathode film, solution must be buffered. As cathode current efficiency is weak at less than room temperature, baths are kept above 75° C. Current densities should be between 5 and 40 amperes per sq decimeter. At about 10 amperes, rate of deposition is fairly high, amounting to a few thousandths of an inch per hour.

Illustration shows photomicrographs of alloys of phos-

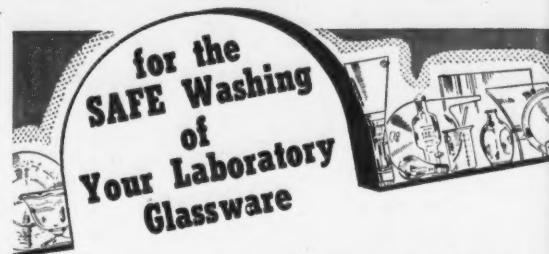


A — low phosphorous nickel (2.3% phosphorous)
B — low phosphorous cobalt (2.2% phosphorous)
C — high phosphorous nickel (13% phosphorous)
D — high phosphorous cobalt (10% phosphorous)

phorus with cobalt and nickel, electro-deposited by means of this technique. Low phosphorous alloys show a columnar structure, while the structure of high-phosphorous alloys is laminated and banded. Magnification is 275X.

Appearance of deposits depends on their phosphorous content. Alloys with less than 2% phosphorous are usually smooth and have a mat finish. However, as percentage increases, deposits become brighter, reaching a peak at a phosphorous content of about 10%. Hardness of deposits as plated varies from 350-720 on Vickers scale, increasing with phosphorous content. For example, a heat-treated cobalt-phosphorous deposit containing about 10% phosphorous reaches a hardness of 1100 Vickers, which is greater than that of electrodeposited chromium. Deposits which have been treated as high as 800°C and cooled are not appreciably softer than the initial deposit. However, the alloys have poor "hot hardness" and above a temperature of 600°C, are softer than unalloyed nickel or cobalt.

Although the low-phosphorous alloys become ductile after heat treatment at 800°C, deposits containing more than 1%



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For the user of carbon dioxide, Pure Carbonic has developed the Carboflex CO₂ Supply System which insures a gas supply in any required quantity.

A handy directory listing the points that make up the nation-wide Pure Carbonic distribution network is available. If you would like a copy, or, if you desire the help of a Technical Sales Service man in the solution of a problem involving the use of carbon dioxide, please write to Dept. CP1859 at the address below.

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phosphorous are generally brittle. Alloys with a higher percentage of phosphorous are highly resistant to corrosion and chemical attack, exceeding the pure metals in this respect. Experiments show nickel alloy with 10-14% phosphorous was attacked considerably less by hydrochloric acid than was pure nickel.

The pleasing appearance, ease of deposition, hardness, and corrosion resistance suggests use for gauges, cylinder walls, and other machine parts. Although the phosphorous alloys are not as white as bright nickel, operation of baths is not as critical as for proprietary bright nickel.

The phosphorous alloys can be plated from a bath made up entirely of inorganic chemicals, whereas bright-nickel plating solutions must contain an organic brightening agent. (Method for producing electrodeposits of cobalt or nickel alloyed with phosphorous has been developed by Abner Brenner, Dwight E. Couch, Eugenia K. Williams of the National Bureau of Standards, Washington, D. C. Further details are available in J. Research NBS 44, 109, (1950) RP2061.)

Pick up, dump annealing pots with hydraulically operated lift truck attachment . . .

variation of barrel grab device speeds up transfer to shake-out tables

A variation of the revolving barrel grab used on lift trucks simplifies transfer of heat-treated metal parts from annealing ovens to shake-out table. Special gripping shoes are pivoted freely on the grab arms for self-positioning around annealing pots. To protect the lift plunger from pitting and scoring by dust, truck's lift plunger is equipped with a tubular steel hoist protector.

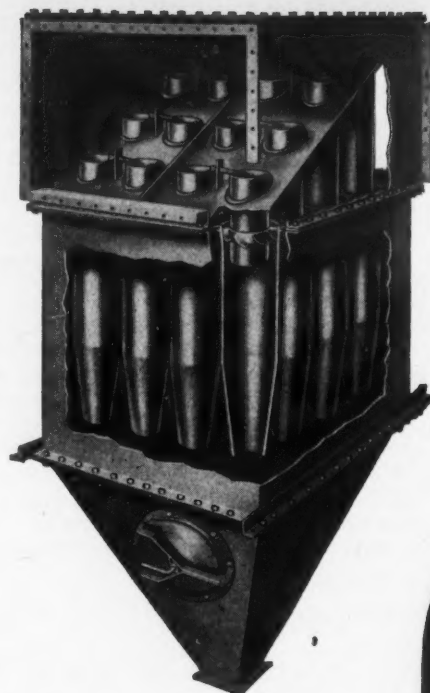
In operation, pot dumper picks up a pot of castings after it has been removed from annealing dumper and cooled. It carries load to shake-out table and inverts pot of castings over table, placing the inverted pot on the table. After pot of castings has been shaken out, it is picked up, rotated to upright position, and placed on conveyor which returns it to annealing department. Gripping shoes handle pots regardless of irregular shape. (Pot dumper accessory is a development of Towmotor Corp., 1226 East 152nd St., Cleveland, Ohio.)



Pot dumper mounted on truck

Articles discuss fabrication and salvage by welding

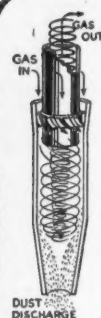
Articles discussing fabrication, salvage, safety tools, and cold bent resistance welding are included in 3rd quarter issue of Ampco Welding News. Publication is issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 2131 on handy form, pages 2 and 3.



In dust and fly ash recovery

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and only Multiclones give vital advantages like these . . .



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Uniformly High Recovery:

MULTICLONE's multiple small diameter tubes—made possible by its exclusive vane design—whirl the dirty gases with greater centrifugal force, thus throwing out not only the large, medium and small particles, but also a high percentage of the extremely small particles of 10 microns and less. This, coupled with the fact that there are no pads or filters to become choked with recovered material, results in a more complete recovery of all suspended materials from the gas stream.

Maximum Adaptability:

In addition to its unusual compactness, the MULTICLONE is also unusually adaptable to various installation requirements. Where head room is low it can be installed with side-inlet side-outlet connections. Where side clearances are restricted, it can be installed with side-inlet top-outlet connections. In addition, without changing capacities, the shape of the unit can be varied—long and narrow, short and wide, or square—to fit restricted spaces . . . and its single-inlet single-outlet duct requirements permit greater flexibility and simpler installation. These savings slice installation costs, space requirements and insulating expense.

Space-Saving Compactness:

Plant space costs money—so be sure to check space requirements carefully. As shown in the accompanying chart, the MULTICLONE requires less floor space and less cubic space than any other unit of comparable capacity and performance. Translate these savings into today's high costs for plant space and you readily see the great importance of this one MULTICLONE advantage alone!

Make	Space Requirements In Sq. Ft.	Relative Space Requirements In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.6	3.9

Minimum Maintenance:


The MULTICLONE has no high speed moving parts to repair or replace . . . no pads or filters to clean or renew . . . nothing to choke the gas flow or increase draft losses as suspended materials are recovered. MULTICLONE draft losses remain uniformly low at all times. Further, the recovered material from an entire bank of tubes is collected in a single hopper—far easier to service and maintain than the multiple hoppers of conventional cyclone units.



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This 32 page booklet outlines the basic principles of centrifugal dust recovery and shows the many ways MULTICLONE advantages assure higher recovery at lower overall costs. A free copy of this booklet will gladly be sent on request. Write today!

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I can heartily recommend this equipment. Thanking you.

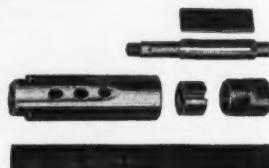
Yours respectfully,

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IDEAS

Patent Pools

(Continued from page 4)

industry, particularly in the organic field, lends itself to so many specialties. Because of this, the environment is not conducive to general pooling of patents except when some basic new industry, such as synthetic rubber, is in the making.

However, whenever through individual action or through bilateral agreement, certain segments of the industry endeavor to curtail production below the legitimate demand, or indulge in the questionable practice of limiting the end-use of intermediates in order to vest monopoly in the chosen few, one is justified in voicing criticism. Certainly it cannot be said that the public interest is well served by such policy. Patent laws were not designed to protect such practice, and any competitor who rebels against the practice is serving the general welfare as well as himself.

Are patent pools equitable? Some are and some are not. In general, the answer can be in the affirmative, *provided*—

That the public interest is not neglected.

That it is a voluntary arrangement entered into on a basis of equality.

That it serves the useful purpose of accelerating the development of the art.

That it is open to all qualified competitors on equal terms and on a uniform basis.

That it is impartially administered regardless of the size of any participant.

That it is untarnished by price-fixing and is free from the taint of monopolistic practice or intent.

That it is not designed to curb volume of output and fixes no limitation upon the end-use of the product.

And finally, that it has for its prime purpose the mobilization of such scientific knowledge, inventive genius and technical "know-how" as is related to the industry concerned, in order to promote orderly progress within the industry itself and for the ultimate benefit of the public-at-large, which of course means the customers who furnish the market for the finished product.

HAVE YOU ANY COMMENTS?

If you have any comments about the above editorial or other articles appearing in this issue, write the Editor, CHEMICAL PROCESSING, 737 N. Michigan Ave., Chicago 11, Ill.

**Welds aluminum without flux
by inert-arc method, avoids
corrosive reactions . . .**

fabrication of aluminum salt bins typical of difficult operations it simplifies

An inert-arc welding process eliminates the expensive flux removal problem and eliminates corrosive action due to entrapped flux. A typical application is found in the case of aluminum salt bins recently fabricated by the Day Company of Minneapolis. The bins have an overall height of 10' 3", with diameters ranging from 6 to 8'. They were fabricated from 61S-T6 aluminum of various gauges through 1/4".

No preheat or special cleaning was involved, and because of the bulkiness of the bins, many welds were

Maintenance Coatings that BAR CORROSION from wide range of chemicals



Ucilon* Coating Systems are reducing painting frequency and expense in scores of plants

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TREATMENT TANKS and equipment used in the manufacture of a hypochlorite bleaching solution were protected with Ucilon Coatings. To the plant engineer, these coatings have proved to be truly remarkable—giving length

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AT ANOTHER PLANT, a Ucilon Coating System has been used on cooling towers and kerobenzene storage tanks located next to a sulphuric acid tank. Formerly, these tanks had to be painted every three months. Ucilon Coatings, however, have lasted 1 1/2 years—and still are in excellent condition.

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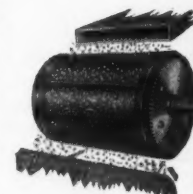
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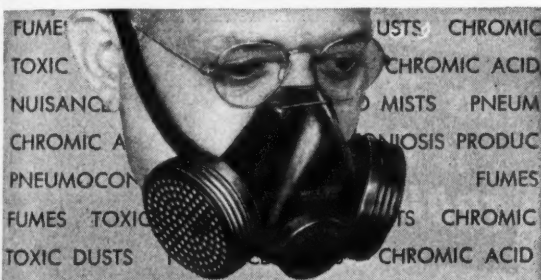
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When inquiring check CP 2137 on handy form, pgs. 2-3

DECEMBER, 1950

made in the vertical-up and vertical-down positions. Welding aluminum without flux is one of the features of this inert-arc method. (Inert-arc welding is a development of fundamental research in General Electric Company welding laboratories at Schenectady, N. Y.)

**Modernization of gasoline refinery
ups capacity 100%, increases
over-all octane rating . . .**

heat conservation is stressed in Canadian plant that uses two unique combination units

A modernization program completed this year at the British American Oil Company's refinery in Montreal, Quebec, has raised capacity almost 100% and improved the over-all octane rating of the refinery's gasoline. Added to the existing 16,000 BPD thermal refinery were 1) a combination crude topping and decarbonizing unit from which hot feed flows directly to 2) another combination unit — a jointly operated fluid catalytic cracking and catalytic polymerization unit — without loss of heat through intermediate storage.

Aside from several design innovations in the combination cracker-poly-gas-recovery unit, certain novel methods of squeezing out the value of by-product heat have been employed at the refinery. For example, the hot slurry from the bottom of the fractionator is used for re-boiling heat in the gas recovery system. Another heat exchanger converts the excess thermal energy of the oil-catalyst mixture into steam.

A second instance of heat conservation involves the use of hot oil product from the fractionator for heating and re-boiling in the polymerization unit. Still another case is the conversion of heat to steam by employing a fire-tube boiler at the regenerator outlet, thus providing energy for driving pumps and blowers.

On the cracker, the precipitator has been eliminated, primarily because the improved design of the regenerator cyclones keeps the natural catalyst loss at a negligible minimum. The small amount of catalyst that is lost with the flue gas is less than the amount which must be replaced to maintain proper selectivity.

Although the fact that the spent catalyst stripper is integral with the reactor is not a new design feature, the elimination of the catalyst recycle boiler in this unit is a new development, tailored to meet B-A's needs. This variation, while it would limit flexibility of the unit for some operations, lowers the investment cost markedly by cutting out one large, expensive vessel.

Main change in the gas recovery section is the "borrowing" of the cracker fractionator for distilling vapors containing absorbed gasoline. Again, this meets the particular requirements of this plant and might not be adaptable to other refineries.

The poly reactors are designed to charge 1,428 BPD of light fractions which have been treated in the H₂S removal unit. After the reaction, light-ends such as propane, ethane and butane are removed in standard fractionating columns. Propane goes to LPG sales and as make-up feed for the decarbonizer; lighter gases are used to drive gas engine operated compressors in the recovery system. The butane is naturally employed for vapor pressure blending of gasoline.

Source: The combination units were designed and constructed by The M. W. Kellogg Company, Dept. CP, Jersey City, N. J. . . . or for more information check CP 2138 on handy form, pages 2 and 3. . . .



**"K" ON A FITTING
MEANS
CRITICAL INSPECTION**

You have doubtless seen the trouble, damage and expense caused by a defective fitting on the line. You therefore understand why only perfect "K" fittings are permitted to reach the market. From start to finish the entire Kuhns operation is a quality control program.

Inspection starts with frequent analysis of the melt for porosity and machinability. Inspections take place at every stage of the process. Sharp-eyed, experienced men are ever checking and testing against the high standards that have to be maintained.

"K" fittings, therefore, substantially exceed code requirements and "K" fittings are of course Underwriters' Laboratory approved.

Standardize on "K" fittings, the brand that make up easy, pull tight and give entire satisfaction. If your supplier does not carry them, suggest that he do so.

**THE
KUHN'S BROTHERS CO.**
1808 McCall Street
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K

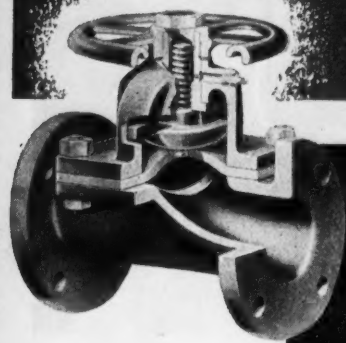
CAST-IRON FITTINGS

Established 1887

When inquiring check CP 2139 on handy form, pgs. 2-3

Page 49.

Now you can valve
66° Bé Sulphuric Acid
without leakage, dripping
or sticking



HILLS-McCANNA
Diaphragm
Valves
with L-1
PLASTIC
DIAPHRAGMS

NEWLY developed plastic diaphragms for Hills-McCanna Diaphragm Valves now make it possible to handle 66° Bé sulphuric acid without leaking, dripping or sticking. The combination of the proved Saunders Patent pinch clamp principle with the new plastic diaphragm puts an end to these troubles so common in valving 66° Bé sulphuric.

Hills-McCanna Diaphragm Valves for handling 66° Bé sulphuric are suitable for temperatures up to 125° F., pressures up to 100 psi. To get complete information, price and delivery data, write today. Specify valve sizes (½" to 4" incl.) and body material (cast iron, cast steel, Duximet or glass lined) desired. Full explanation of the Saunders Patent principle and specifications for Hills-McCanna valves for other services are given in Catalog V-48, available on request. **HILLS-McCANNA COMPANY, 2370 W. Nelson Street, Chicago 18, Illinois.**

HILLS-McCANNA
diaphragm valves
saunders patent

Proportioning Pumps
Force-Feed Lubricators • Magnesium Alloy Castings

When inquiring check CP 2140 on handy form, pgs. 2-3

IDEAS

**Inject radioactive tracer
into pipe line to detect,
identify interfaces . . .**

meets difficulties where small amounts of many products are taken off at 7 points and terminal. Minute quantities of radioactive isotopes, injected into a large pipe line each time product handled is changed, permits proper separation of products as they are delivered to tankage. This development is being used in pipe line extending from Salt Lake City, Utah, to Pasco, Washington, a distance of 566 miles. Line is now in operation to Boise and will be completed at end of this year.

None of the various established means of identifying interfaces in product pipe lines appeared either accurate or convenient enough for the requirements of this installation. This was because of the following factors: (1) Relatively small amounts of individual product taken off at one point, as compared with larger product lines elsewhere in the country. (2) The many take-off points (seven) and a terminal at which products are distributed. (3) Length of line of 566 miles. (4) The



Moving remote control to measure tracer liquid for injection into line between products

many different products pumped through the line, including several different types and grades of gasoline, diesel oil and stove oil that must be identified and delivered at various points.

For these reasons, it was decided to develop a new method of marking product interfaces. It would have to be independent of the physical properties of the products and give a clear and reliable indication of both the location of an interface and the extent to which the adjacent products had come mingled with each other. These requirements could best be met by a "tracer" employing radioactive isotopes.

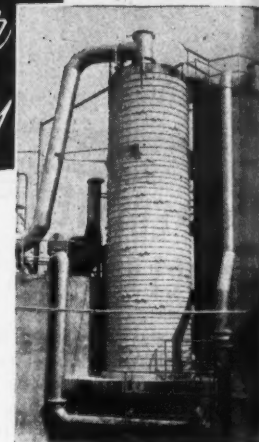
Ordinary antimony is used in preparing the tracer. It is sent to the laboratories of the U. S. Atomic Energy Commission at Oak Ridge, Tenn., where it is placed in an atomic pile and subjected to neutron bombardment for the necessary period. The "hot" material is returned in lead-shielded boxes. Then it is further processed and diluted with light oil to become the tracer liquid.

At the Salt Lake pump station the tracer liquid is stored in a stainless steel vessel behind heavy shielding. The injection system, itself, is designed to permit handling

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Powder Dry*

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system cuts handling
costs . . . keeps your
chemicals BONE-DRY**

Chemical processors find that a flexible MARIETTA storage system solves all their storage problems. Air-Cell construction keeps out moisture, and materials stored can't cling to the rock-like interior surface. Because of the maximum protection offered by MARIETTA, insurance rates are lower.



The MARIETTA Engineering Department can show you how to reduce your materials handling costs. Because these storage systems are flexible, they can be tailored to your exact requirements.

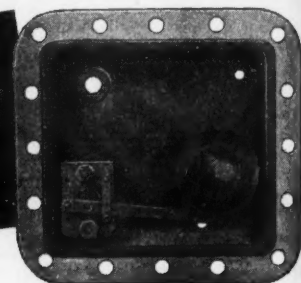
Write today for information. Naturally, there's no obligation.

THE MARIETTA CONCRETE CORP.

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Box 1575, Charlotte, N. C.

When inquiring check CP 2141 on handy form, pgs. 2-3

**This TRAP
is for
TROUBLE**



Do Your Traps

- ✓ Lose Steam
 - ✓ "Fill and Spill"
 - ✓ Chatter-Vibrate
 - ✓ Wear Quickly
- thereby making
operation expensive?

THEN YOU NEED

ROCKWELL
Continuous
Drain
**STEAM
TRAPS**

Exposed view of Rockwell Steam Trap showing simple, tight, self-sealing slide valve mechanism with lever and float; operated continuously by the condensate, not intermittently by the steam. The entire mechanism is of stainless steel, does not wear out; does not drop in efficiency with long usage. Inspection easy without breaking lines or removal of trap. Sizes to 1" pipe; pressures to 300 p.s.i. and temp. to 750°F. Orifices interchangeable for different flow rates.

- Greater Capacity
 - No Valve Seat to Wear
 - No Priming—No Leakage
 - Noiseless
 - Uniform Performance
- Write for Bulletin 600

W. S. ROCKWELL CO.
220 Eliot St., Fairfield, Conn.

When inquiring check CP 2142 on handy form, pgs. 2-3

the radioactive liquid with complete safety to operators. Remote control is utilized, with valve handwheels extending beyond the shielding. Mirrors are used for observation of the tracer liquid when injection quantity is measured in a gauge glass. This is the only place outside the laboratory where the radiation levels are sufficiently high to require precautionary measures.

Each time the product pumped through the line is changed, a few cubic centimeters of tracer liquid are metered out and injected into pipe line just at interface. Tracer follows interface through the line and is detected with suitable instruments.

One of the illustrations shows Geiger-Mueller tubes being installed on main discharge pipe. Tubes pick up radioactivity in the traced interface. Square "meter box" object under left hand of radio technician is an explosion-proof housing for part of the electronic cir-



Installing Geiger Mueller tubes on main discharge pipe to pick up radioactivity in traced interfaces

uits which transmit the impulses from Geiger tubes to counting rate meter. With such instrumentation, it is possible to accurately identify the passage of the interface at each take-off point along the line.

At take-off points where only a heart-cut is to be taken, operator need only verify from tracer chart that the interface has passed. Then, in accordance with instructions from dispatcher, he will withdraw the required amount of that product to tankage. At terminal points where it is necessary to take the entire stream, separation of two products is more complicated. It is for this reason that advance telemetering of the interface is used at such locations.

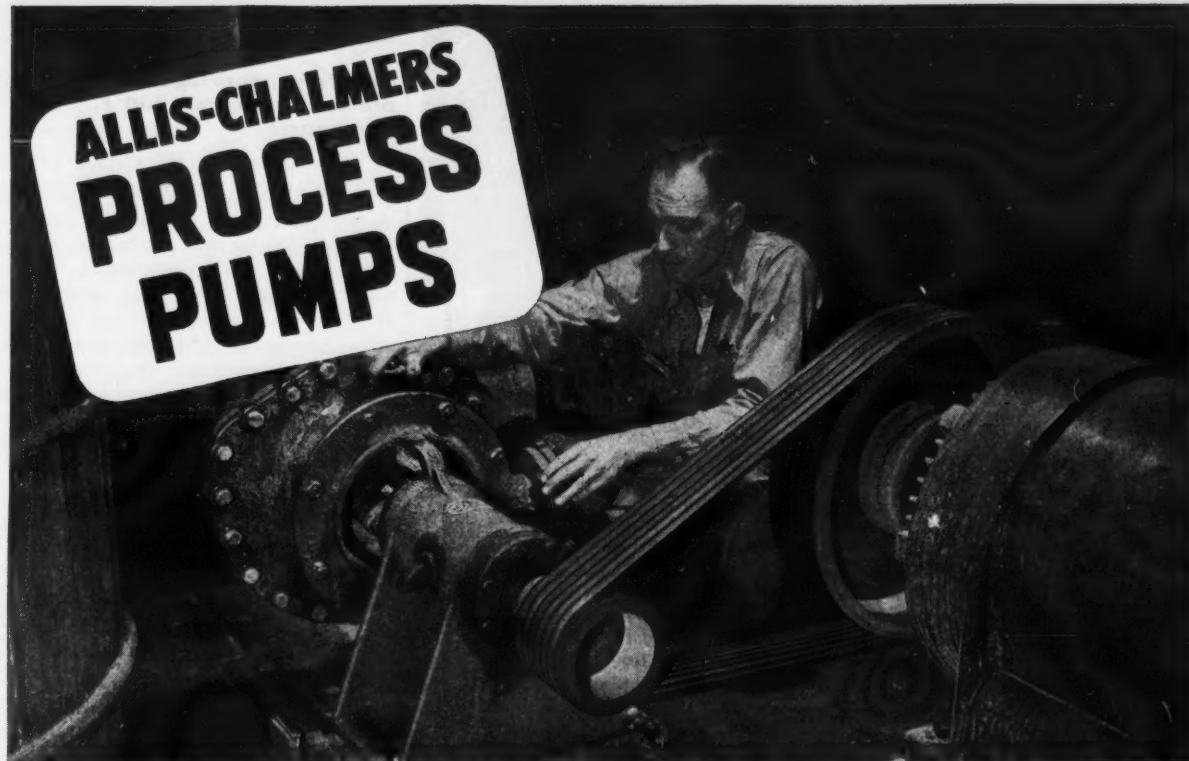
One important point is to be emphasized: no appreciable amount of radioactivity remains in the products. The tracer is immediately diluted when it is injected into the pipeline. The isotope by its nature is self-destroying, its radioactivity decreasing with age. (Salt Lake Pipe Line Company using this method is a subsidiary of Standard Oil Company of California, San Francisco 20. Method is the subject of patent applications by California Research Corp.)

Photos show advantages of low-temp welding

Series of photomicrographs contained in 4-page release show how use of low-temp welding alloys avoid distortion, stress, warpage, and embrittlement. Basic information is presented in question-and-answer form. Form EU. 77 is issued by Eutectic Welding Alloys Corporation, Dept. CP, 40 Worth St., New York 13, N. Y. When inquiring specify CP 2143 on handy form, pages 2 and 3.

DECEMBER, 1950

ALLIS-CHALMERS PROCESS PUMPS



CUT PUMP GRIEF ON ABRASIVE AND CORROSIVE JOBS

THIS ALLIS-CHALMERS PROCESS PUMP gives you many times the wear of an ordinary pump, even those made of special materials. One user had been replacing major parts in his old pump every six to ten weeks. An A-C process pump ran twenty months on the same job without repair. Here is why these savings are common:

UNIQUE DESIGN

Packing is on suction side. Pressure on packing is limited to suction conditions. This prevents excessive packing and shaft sleeve wear and leakage. Double volute casing balances hydraulic forces on rotating parts. Cuts vibration and eliminates pounding on operations where conditions vary, such as in pumping from filters.

Adjustment of wear between impeller and impeller wear plate may be made

without dismantling pump. Parts subject to unequal wear are separated for easy, low-cost replacement.

4 MATERIALS IN STOCK

All parts are stocked in Aluminum Bronze, Ni-resist, 316 Stainless Steel and 18% Chrome Steel. You don't need to carry a spare parts stock. Only Allis-Chalmers can supply pump, motor, *Texrope* V-belt drive and motor control — all from one stock without waiting.

Ask your A-C Authorized Dealer or Sales Office representative to give you facts and figures on what A-C process pumps can do for you. Or write for Bulletin 08B6615.

A-2989

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MILWAUKEE, WIS.



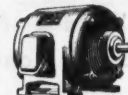
Texrope and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

When inquiring check CP 2144 on handy form, pgs. 2-3

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by Allis-Chalmers Authorized Dealers,
Certified Service Shops and Sales Offices
throughout the country.



MOTORS — 1/2 to
25,000 hp and up.
All types.

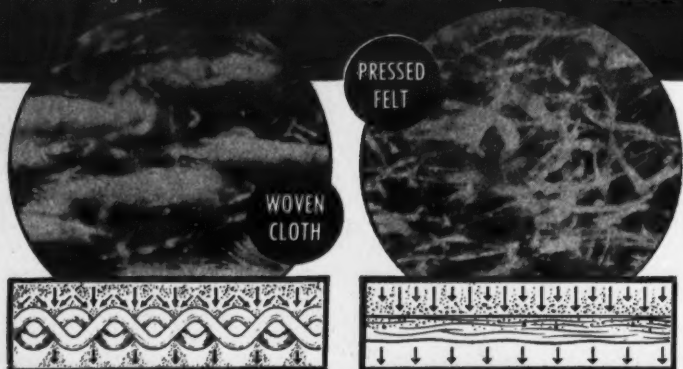
CONTROL — Manual,
magnetic and combina-
tion starters; push but-
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nents for complete con-
trol systems.



TEXROPE — Belts in
all sizes and sections,
standard and Vari-
Pitch sheaves, speed
changers.

IT MUST BE FELT To Be Efficient in Dust Collection

Photo-micrographs illustrate value of wool felt as a superior filter medium.



Photomicrograph (25 diam. enlargement) of ordinary filter cloth... Drawing shows how dust can escape through open mesh.

Photomicrograph (25 diam. enlargement) of special, pressed wool felt... Drawing shows how dust particles are trapped by the density of the felt while air flows through in constant volume.

Even the split-micron dust particle will not penetrate the microscopic pores of the cylindrical bag of special felt in a MIKRO-COLLECTOR.*

Moreover, the bag is kept constantly clean by the Hersey automatic, reverse-jet cleaning ring which flexes the bag while moving up and down its outer surface—thus assuring free airflow, phenomenal filter rates and far higher capacity per given area of filter fabric.

Put these two features together and you have the reason why a MIKRO-COLLECTOR not only TURNS YOUR DUST INTO DOLLARS but stops those many dollar losses due to inadequate dust control.

SEND FOR actual sample of felt that makes the MIKRO-COLLECTOR so outstanding... also case histories revealing dollar and cents savings through its use.

*Patents applied for by H. J. Hersey, Jr., and Pulverizing Machinery Company.

PULVERIZING MACHINERY COMPANY
60 Chatham Road Summit, New Jersey

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MIKRO-PULVERIZERS and MIKRO-ATOMIZERS

PRESERVE OUR HERITAGE: FAITH, FREEDOM AND INCENTIVE.

When inquiring check CP 2145 on handy form, pgs. 2-3

IDEAS

Liquids appear superior for process heating to 1200°F, says report...

give more uniform surface temperatures, are more adaptable to control than vapor or gas systems

A process designer has several means of heating at his disposal. Among them are heating with air and combustion gases, steam, vapors of certain chemicals, and liquids (water at high pressure or chemicals with high boiling points).

According to Paul L. Geiringer, Chief Engineer of American Hydrotherm Corp., liquid heating is proving to be superior in the temperature range from 250 to 1200°F. As he points out, air and gases require very large ducts when heated to high temperatures, and large volumes must be transported for desired heat energy at various points.

Then too, the specific heats of these gases are low, and the efficiency of the heating system is correspondingly low. No uniformity of surface temperatures is attainable with these systems.

Steam can only be utilized for heating processes in the saturated state. The losses due to condensate flashing, and the high pressure requirements discourage steam heating for processing above 250°F.

With vapor heating, the condensate film deposited in the vapor space hampers the heat transfer and causes considerable temperature difference between places free of condensate and those slightly or heavily covered with condensate film. In the condensation of chemical vapors, the non-uniformity of heat transfer is even more apparent than it is with water. This is due to the lower specific heat of condensate and lower latent heat of the vapor. High temperature applications requiring both a heating and cooling phase become rather complex, if not impossible, when the vapor of a chemical compound is used.

On the other hand, liquid flowing through a pipe has, at a given cross-section, the same heat transfer coefficient at any point of the periphery. The variation will occur only in an axial direction. In liquid systems producing high temperature air, or in other applications where close surface temperature is not required, the heat carrier returns to the boiler at considerably lower temperature, resulting in higher boiler efficiencies as return line losses are reduced.

Design of liquid circulating systems must be carefully coordinated with the physical properties of the heat carrier selected, for maximum operating efficiency. Heating and cooling requirements may be satisfied without changing the fluid.

Liquid systems permit complete automatic operation of the heating and cooling cycle. The gradual heating up of presses is only feasible with liquid systems, says Mr. Geiringer. Certain fibre boards are produced by pressing and slow heat application; rapid heat might destroy the material due to rapid evaporation of the moisture content. The liquid content of the system, which acts to some extent as a heat accumulator, serves to reduce the boiler peak load and output.

Liquid heat carriers

Water is the best heat carrier, but the vapor pressure becomes too high over 400°F. Liquid oils, and a diphenyl oxide mixture (Dowtherm A) as vapor or liquid, have the drawbacks of inflammability at high temperatures, and low surface tension, according to Mr. Geiringer. The heat transfer characteristics and viscosity curves of oils are not favorable. The heating system for the diphenyl mixture

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Cylinders
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Tubing
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Immediate Delivery

We supply the Teflon stock you need in any quantity without delay. Our selection, the most complete in the country, includes many special items. For example, we furnish unoriented sheet Teflon (starting at 1/16" thickness) in sizes up to 36 x 36"—the largest sheet Teflon offered anywhere.

Teflon—if you haven't already discovered it—is a unique new DuPont plastic, unequalled for absolute chemical inertness, adhesion resistance and dielectric strength. Teflon cannot be attacked by nor contaminate any industrial acid, solvent, caustic, oil, gas, etc. It is extremely tough and suitable for temperatures from -150°F. to 550°F. (can be recommended for higher temperatures in some cases). Teflon is the perfect answer to hundreds of product and equipment problems throughout the processing, chemical and electrical industries.

You'll find Teflon stock is easily machined or cut into whatever parts you need. So whether you're ready for quantity production or merely wish to evaluate, let us know your requirements. We can help you cut costs in many ways.

For complete information on Teflon and on types and dimensions of Teflon stock available, write for Catalog No. 300.

We also manufacture Teflon parts molded exactly to your specifications.

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COMPANY**

618 N. 10th St.

Camden, New Jersey

When inquiring check CP 2146 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Catawissa

PERFECT SEAL Unions

HOT FORGED from solid **RECTANGULAR STEEL BARS** to give you **SURE-FIRE PIPING DEPENDABILITY**

A TYPE FOR EVERY USE! **PERFECT SEAL** even with pipe not in alignment!



Standard & Double Extra Heavy UNIONS

Available with screwed or socket weld ends. 3000-lb. sizes $\frac{1}{8}$ " to 3"; 6000-lb. sizes $\frac{1}{8}$ " to 2".



ORIFICE UNIONS

With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

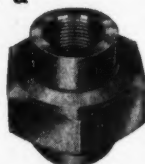
MALE & FEMALE UNIONS

With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.



FULL STAINLESS & FULL ALLOY STEEL UNIONS

With screwed or socket weld ends. 3000-lb. and 8000-lb. service.



CATAWISSA Ends Guesswork in Union Requirements!



write for **CATALOG 11** showing the complete Catawissa line

CATAWISSA VALVE AND FITTINGS COMPANY
620 Mill St. • CATAWISSA, PA.

When inquiring check CP 2147 on handy form, pgs. 2-3

IDEAS

must be designed for pressure if temperatures much above 500°F are desired.

In Mr. Geiringer's experience, one of the best heat transfer media in the temperature range from 400 to 550°F, and maximum 600°F, is a chlorinated biphenyl, also known as Aroclor, for which the trade name Hydrotherm No. 500 is used by his company. This material is practically non-inflammable and can be pumped with centrifugal pumps at temperatures as low as 50°F. It is fully stable up to 540-590°F, and has a vapor pressure of only 6 or 7 psi at 600°F. The viscosity and heat conductivity are considerably more advantageous than those of any oil. The surface tension is favorable, and no penetration occurs through small holes, etc. Practically all metals are inert to this carrier.

A silicate with the trade name of Hydrotherm No. 700 shows excellent characteristics in the temperature range from 600 to 650°F. It has the same advantages as No. 500. The fluid can be kept in the liquid state from -40 to +700°F and even higher. The specific heat in the higher temperature range exceeds 0.7, and the viscosity is very low. Even at 700°F, the vapor pressure is negligible. The fluid is ideally suited for heat transfer applications up to 650°F, and for cooling processes using temperatures near 0°F.

For temperatures of 700 to 1200°F, a high temperature salt containing 50% each of sodium nitrite and potassium nitrate looks good. This mixture forms a thermally stable eutectic non-corrosive fluid at temperatures above 282°F. The specific gravity of this fluid varies from 1.68 to 1.97, and the specific heat is about 0.3 to 0.37. The viscosity curve is not too favorable. It appears that this eutectic salt mixture offers no more danger than that inherent in any liquid at these high temperatures.

Fuel Costs

The overall efficiency of liquid heating systems, based on existing installations, is approximately 70% at a fluid temperature of 500°F. Assuming a No. 6 oil price of \$0.06 per gallon, the resulting fuel cost would be \$0.57 per million Btu/hr. Equivalent high pressure steam heating systems operate at an overall efficiency of 50 to 60%, and result in fuel costs of \$0.66 to \$0.80 per million Btu/hr.

With electricity, assuming an efficiency of 98% and cost of \$0.02 per kw-hr, the corresponding expense would be \$5.80 per million Btu/hr.

(Summarized from paper, "Process Heating by High Temperature Liquids," provided by The American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.)

Variety of centrifugal pumps described and illustrated

Wide variety of centrifugal pumps offered in 16-page, illustrated bulletin include close-coupled; pedestal; double suction; single stage and multi-stage; self-priming; fractional horsepower; coolant and circulating; fire; solids-handling; marine; rubber lined; paper pulp; sewage; axial; and mixed flow.

Head capacity charts and tables are given, along with data on sizes, capacities, and construction features. Pumps are illustrated by photographs or cutaway drawings. Bulletin 52B6059G is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 2148 on handy form, pages 2 and 3.

• CLOTH FOR HOT ACID FILTRATION • CLOTH FOR HOT DUST COLLECTION

USE CLOTH MADE FROM "ORLON" Acrylic Fiber



This cloth is available in standard width of 38" from stock. We will weave any desired width from 26" through 72" to your order in quantities as low as 100 linear yards.

We have a background of over Forty Years in weaving Industrial Fabrics...we weave all of our own Synthetic Fiber Filter Fabrics. We have the "know how" necessary to produce uniform Filter Cloth with outstandingly superior operating characteristics.

Literature and pilot test sample available on request.

Also Weavers of Filter Cloth from:

GLASS, SARAN, NYLON VINYON† and VINYON N†

*TM — E. I. duPont de Nemours
†TM — UCC

If high operating temperatures are your problem we suggest you try this NFM cloth made from ORLON* Acrylic Fiber. Here are some of its values:

No loss of strength after 32 days exposure to air at 257° F.



Shrinkage not more than 2 1/2% in water at 212° F.



Good resistance to hot mineral acids, weak alkalis, common solvents, oils, greases, neutral salts, most acid salts and chlorine.



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When inquiring check CP 2149 on handy form, pgs. 2-3

NOW...

a Field Service Manometer by MERIAM

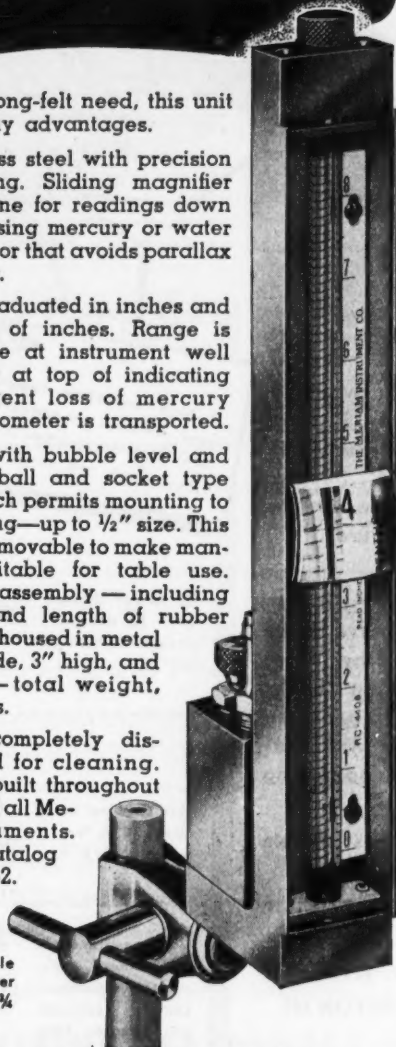
Filling a long-felt need, this unit offers many advantages.

All stainless steel with precision bore tubing. Sliding magnifier with hairline for readings down to 0.02", using mercury or water—and mirror that avoids parallax in reading.

Scale is graduated in inches and twentieths of inches. Range is 0-8". Valve at instrument well and fitting at top of indicating tube prevent loss of mercury when manometer is transported.

Provided with bubble level and universal ball and socket type clamp which permits mounting to meter piping—up to 1/2" size. This clamp is removable to make manometer suitable for table use. Complete assembly—including mercury and length of rubber tubing—is housed in metal case 5" wide, 3" high, and 14" long—total weight, 7 1/2 pounds.

Can be completely disassembled for cleaning. Precision-built throughout—typical of all Meriam instruments. Ask for Catalog Sheet B2862.



Handy Portable Field Manometer weighs only 3 3/4 pounds.

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ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 2150 on handy form, pgs. 2-3

High Frequency Current Used to Detect Partially Filled Packages

Amplitude of current is measure of fill; bottles, paper, wood and plastic packages can be inspected this way

A RECENT application of high frequency current to detect empty packages among filled ones on a conveyor line could find extensive use in the packaging field. Electronic equipment was used to determine, at a rate of 150 per minute, whether any empty packages of cigarettes had passed through the sealing machine. Although empty boxes occur only a few times a day, they can be responsible for much ill will. Four instruments have been in use for more than 8 months and have given satisfactory operation.

The method used consists of passing a low amplitude, high frequency current through the package as it is carried on a conveyor. The value of current flow is a measure of package fill. When the value indicates an empty package, the conveyor is automatically stopped.

High frequency current has electrical characteristics differing greatly from those of ordinary a-c current. It passes through air with relatively little attenuation so that a solid conductor is unnecessary. As a result, its use is not complicated by contact pressure, dirty contacts and similar uncontrollable factors which affect the use of low frequency current. However, the amplitude of current is dependent upon what is in its path. Thus if a box of powdered material is being inspected, the electrical properties of the powder itself are taken into account in determining the fill of the box. With high-

precision measurement, it is possible to tell not only whether or not the box is full, but also whether foreign or other material is in the box.

In addition to amplitude of current, other indications dependent on the chemical nature of the material being inspected can be measured. Among these indications are the phase of the current in respect to generator voltage and the development of harmonics.

High-frequency current methods can be used for detecting empty or partially-filled containers made of paper, plastic, glass, wood, and similar non-conductors of electricity. Metal containers are usually not suitable, although there are special cases for which this method of inspection is also possible.

The contents of the package can be liquid or solid or a powder and must have certain electrical properties to aid the passage of high-frequency current.

There is no limit to the speed of detection, except for mechanical limitations such as conveyor speed, time required to remove package from conveyor or stop the conveyor. Sensitivity can be adjusted to indicate partially-filled, empty, and non-uniform packages.

Source: Photobell Company, Dept. CP, 116 Nassau St., New York 7, New York . . . or for more information check CP 2151 on handy form, pages 2 and 3.

Intends metallograph as a routine control instrument . . .

combines good optical performance with convenience and simplicity of operation

Uses: Suitable for microscopic study of metals. Grain size measurements, case depth, and other linear measurements are applications.

Features: Metallograph is designed as a routine control instrument, combining good optical performance with convenience and simplicity of operation.

Description: All components of the metallograph are included in a modern-styled desk. All controls and adjustments are within easy reach. Directly in front of operator are a 5 x 7" camera, monocular or binocular microscope eyepieces, and mechanical stage. Also within easy reach is the electrical control panel for the arc and visual lamps. Four objectives on rotating turret, photographic eyepieces mounted on quick-change slide, camera shutter, and color filters are equally handy.

Optical systems for photography and visual observation are coupled to permit all focusing through the visual

system, eliminating necessity of ground glass focusing. Ferrous or non-ferrous grain size measurements are compared directly on the ground glass with standard grain size charts. Case depth and linear measurements are made with an accessory micrometer rule.

Selection of magnification is a rapid procedure; no tables or charts are required. Objective, eyepiece, and camera bellows settings are all identified by the standard ASTM magnifications; range is from 50 to 1500X, with 2000X available if specified. Built-in visual lamp reserves the use of the arc lamp for photographic purposes. Ribbon filament tungsten lamps and fully automatic motor-driven arc lamps can be provided to suit individual requirements.

Camera is Graflex type using double-plate holders. Photographic eyepieces are designed for optimum results—an Autofocus coarse adjustment stop on stage eliminates possible damage to optics. "Apergon" objectives are balanced for high contrast and good color correction.

Source: Metallograph is a development of the American Optical Company, Dept. CP, Southbridge, Mass. . . . or for more information check CP 2152 on handy form, pages 2 and 3.

Gives % moisture in solids at press of button . . .

midget meter reads directly; can be slung from shoulder for complete portability

Uses: Suitable for quickly determining the moisture content of wood and plaster in the range between 7 and 30% moisture. Recommended for use by lumber mills, wood fabricators, dry kiln operators, paint manufacturers, etc.

Features: Indicates percent moisture directly at the touch of a button. Measuring only 3-1/8 x 4-1/2" square, and weighing less than 4 pounds, instrument can be slung from shoulder for complete portability.



Midget moisture meter indicates directly in percent moisture

Description: Model 8009 moisture meter is battery powered. To check moisture content of wood, needles in electrodes of probe are inserted in sample, button pressed, and value read directly from instrument's dial. To check plaster, needles in electrodes are removed, and the electrodes pressed directly against the surface being tested. In this latter application, meter indicates whether the moisture content of the plaster is above or below the value considered safe for peel-proof painting.

Source: Product of the Tagliabue Division of the Weston Electrical Instrument Company, Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. . . or for more information check CP 2153 on handy form, pages 2 & 3.

Interval timer is available in 11 different ranges . . .

models are made for maximum intervals of 15 sec to maximums of 24 hours

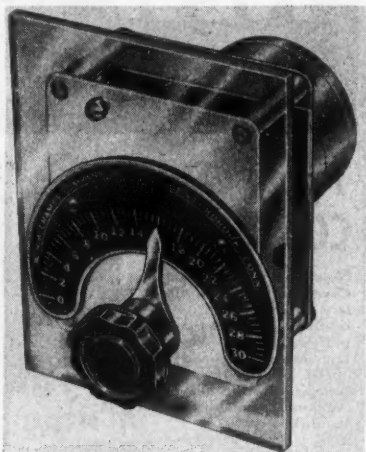
Uses: Times "on" cycle of electrical equipment such as micro-filming equipment, dryers, extractors, ovens, battery chargers and others.

Features: Available with 11 different time ranges, from 15 sec to 24 hr, to permit a wide range of operating control.

Description: The Type IG interval timer operates one or two SPDT switches, and returns to original position at the end of predetermined time interval. Equipment is turned on manually; the timer turns it off automatically at the end of the desired time.

Complete details are contained in manufacturer's Bulletin 130C.

Source: The R. W. Cramer Company, Inc., Dept. CP, Centerbrook, Conn. . . or for more information check CP 2154 on handy form, pages 2 and 3.



Interval timer

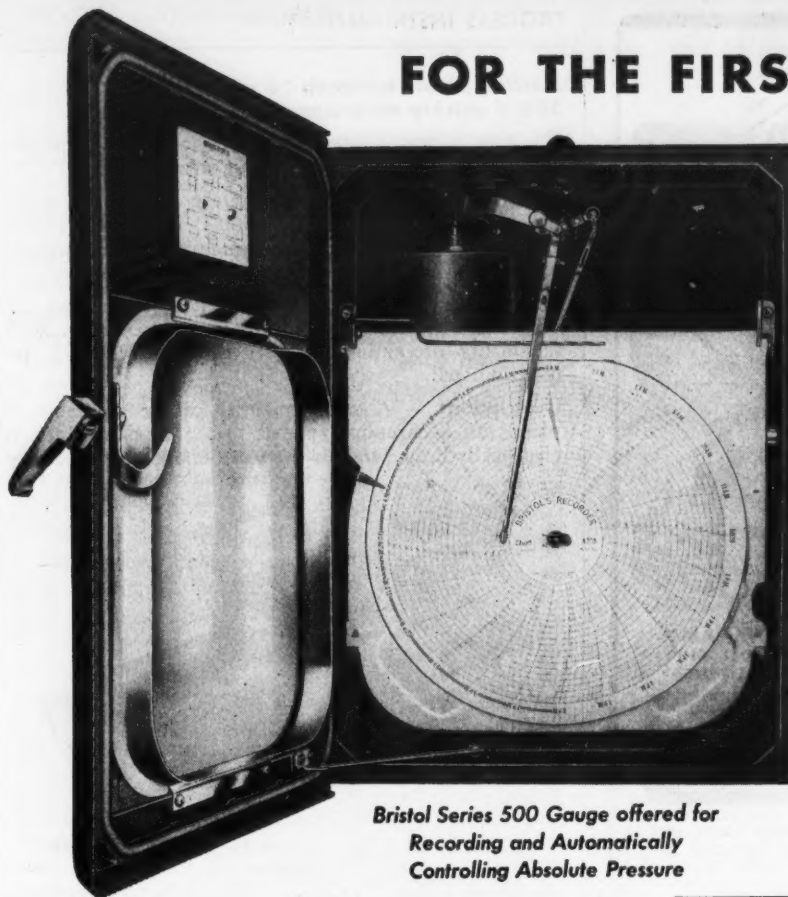
FOR THE FIRST TIME

Accurate Mechanical Recording and Controlling of Absolute Pressure

**IN RANGES AS LOW
AS 0 TO 6 MM!**

Again, Bristol scores a first!

Our new Low-Range Absolute Pressure Recording Gauge gives a direct reading of pressure above zero absolute, inherently corrected for barometric variations, with far greater accuracy than ever before possible—measuring ranges as low as 0 to 6 mm mercury absolute.



Bristol Series 500 Gauge offered for
Recording and Automatically
Controlling Absolute Pressure

SINGLE BELLOWS—NO COMPENSATION NEEDED

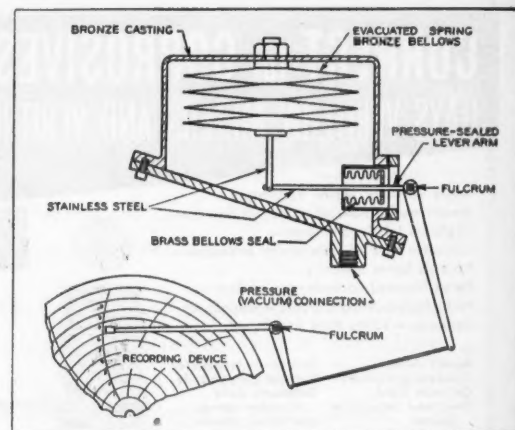
Instead of two pressure elements—one for measured pressure, one to compensate for barometric pressure—Bristol uses a single calibrated bellows element, evacuated to practically a perfect vacuum, enclosed in a cast bronze pressure-tight housing. The bellows motion is transmitted outside the housing through an entirely new device—a pressure-sealed lever arm that is frictionless, entirely free from lost motion and turning moments due to changes in differential pressure across it.

Thus—with one measuring element, Bristol's Absolute Pressure Gauge operates in ranges hitherto considered impractical with metallic elements.

WHAT'S YOUR APPLICATION?

This entirely new, highly-accurate, direct-reading mechanical pressure instrument gives valuable information for controlling pressure wherever the operation of equipment depends upon a high and constant vacuum.

Bristol Low-Range Absolute Pressure Gauge is offered for recording, pneumatic or electric controlling, and pneumatic or electric remote transmission. For Bulletin G620, write THE BRISTOL COMPANY, 141 Bristol Road, Waterbury 91, Conn. (The Bristol Co. of Canada, Ltd., Toronto, Ont.; Bristol's Instruments Co., Ltd., Lynch Lane, Weymouth, Dorset, England.)



BRISTOL

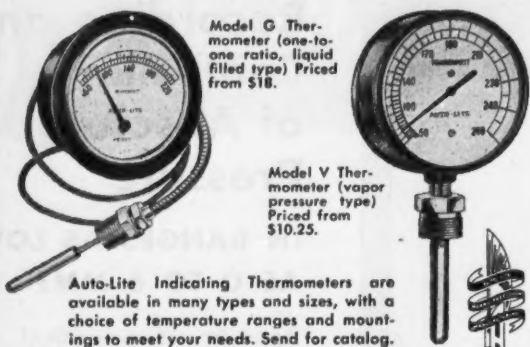
Engineers Process Control
for Better Products and Profits



**AUTOMATIC CONTROLLING, RECORDING
AND TELEMETERING INSTRUMENTS**

When inquiring check CP 2155 on handy form, pgs. 2-3

Depend on **AUTO-LITE** FOR TEMPERATURE INDICATION



THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION • TOLEDO 1, OHIO
NEW YORK CHICAGO SARNIA, ONTARIO

AUTO-LITE
INDICATING & RECORDING THERMOMETERS

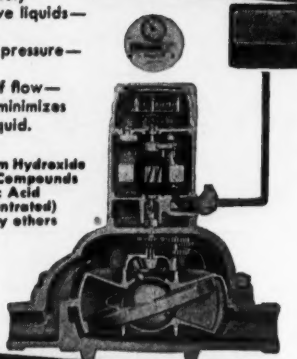
When inquiring check CP 2156 on handy form, pgs. 2-3

CORRECT for CORROSIVES* HAYS VERIFLOW METERS AND VERITROL

Hays Veriflow Meter accurately measures the flow of corrosive liquids—registers total gallonage—indicates rate of flow under pressure—reveals losses instantly.
Hays Veritrol controls rate of flow—reduces losses from waste—minimizes spillage—saves time and liquid.

* Acetic Acid Potassium Hydroxide
Calcium Compounds Sodium Compounds
Carbolic Acid Sulphuric Acid (Concentrated)
Fruit and Vegetable Juices and many others

Complete description of the Hays Veriflow Meter and Veritrol is contained in Bulletin 48-766. Send for your copy, today.



THE HAYS CORPORATION

MICHIGAN CITY 12, IND., U.S.A.

THE HAYS CORPORATION
Michigan City 12, Indiana
Please send me Bulletin 48-766 on the Hays Veriflow Meter and Hays Veritrol:

Name _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 2157 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

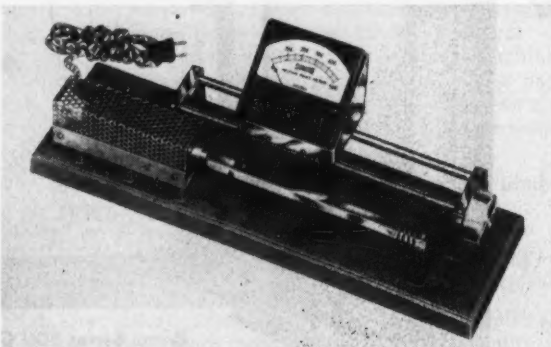
Melting points between 20 and 500°F quickly determined . . .

only a few milligrams of substance are required; sample can be recovered uncontaminated

Uses: For quickly and accurately determining melting points between 20 and 500°F of waxes, resins, gums, fats, tars, plastics, low melting alloys, organic compounds, and inorganic compounds.

Features: Accurate melting point determination can be made with but a few milligrams of sample. With reasonable precaution, samples can be recovered uncontaminated.

Description: A small quantity of the substance is placed on a chromium plated platen or bar, which is electrically heated so that there is a temperature gradient



Electrically-heated bar is used for melting point determination

along its length. Operator determines by observation the demarcation between molten and solid phases and places the small thermocouple junction at this point. Meter then indicates, within a few seconds, the temperature of the point chosen. A screw feed allows the operator to follow the melting point as the bar temperature changes.

Any one of the four sides of the platen can be used. Both platen and thermocouple are easily removed for cleaning or for changing in case of damage or contamination. Instrument operates on 100 volts AC or DC; can be used by any laboratory technician.

Source: Model 304 melting point meter is a product of the Clarkstan Corporation, Dept. CP, 11921 W. Pico Boulevard, Los Angeles 64, Calif. . . or for more information check CP 2158 on handy form, pages 2 and 3.

Scintillation counter used for high efficiency counting of beta, gamma radiation . . .

when used as an alpha counter, background is not more than a few counts per hour

Uses: For detection and counting of alpha, beta and gamma radiation — in counting samples and smears in health physics work, analytical determination of disintegration rate, and counting radiation of ore samples.

Features: As an alpha counter, background is not more than a few counts per hour. Has a 45% counting geometry, short resolving time and no microphonics. Counting efficiency is essentially 100% for thin samples. As a beta counter it features higher counting geometry, no filtration, higher speed counting and less change of characteristics with time. As a gamma counter, its

Here it is!

...a Resistance Bulb with the Speed and Economy of a Thermocouple



THE DYNATHERM® Resistance Bulb, with super-fast response and sustained accuracy, combines the advantages of both resistance and thermocouple type temperature measurement in ranges up to 600°F. No premium cost.

Positive, metal-to-metal end-contact between

bulb and any well or socket gives the

Dynatherm Bulb a speed equal or

superior to any other system

utilizing a socket. Also avail-

able with shell made com-

pletely of 316 S.S. for use in

corrosive fluids, without

sockets. In addition, the re-

sistance bulb method of tem-

perature measurement elimi-

nates reference junction com-

ensation and attendant errors.

Write for details. The Foxboro

Company, 190 Neponset Ave.,

Foxboro, Massachusetts, U. S. A.

*Trade Mark

FOXBORO INSTRUMENTATION

When inquiring check CP 2159 on handy form, pgs. 2-3

NEW IDEA In Pneumatic Control!

Taylor TRI-ACT® CONTROLLER

New Taylor Force-Balance Controller with new circuit is new concept in process control! Combines two proportional bands, one with rate action in closed loop ahead of automatic reset. Rate action shifts first band. Automatic reset shifts second band. You get:

1. Start-up with no overpeaking
2. Benefits of automatic reset without its evils.
3. Faster recovery on load changes.

Get complete details from Bulletin 98097. You'll see how the new TRI-ACT Controller creates new standards in pneumatic transmission systems for temperature, pressure, flow or liquid level control. Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada. Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.

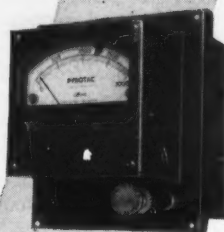
TAYLOR INSTRUMENTS MEAN "ACCURACY FIRST"

When inquiring check CP 2160 on handy form, pgs. 2-3

Heating Safety

Protects YOUR Investment

Alnor Type 5200 Pyrotac
excess temperature cut-off.



The Alnor Pyrotac excess temperature cut-off offers you low-cost, automatic protection against damage due to excessive temperatures . . . safeguards your investment in heating equipment and materials in process.

Simple in operation, the Pyrotac constantly indicates temperature of the heater equipment and stands ready to sound an alarm and/or shut down heater circuits at a pre-set maximum safe temperature. Available in scalar ranges from 0°-600° F. to 0°-3000° F. and Centigrade equivalents.

An Alnor quality instrument, featuring laboratory precision and husky construction; yet the price is only . . .

\$85.00 — far lower than for ordinary instruments of this type.

WRITE FOR BULLETIN
Illinois Testing Laboratories, Inc.
Room 504, 420 N. La Salle Street
Chicago 10, Illinois

Alnor

**PRECISION INSTRUMENTS
FOR EVERY INDUSTRY**

When inquiring check CP 2161 on handy form, pgs. 2-3



**"LIQUIDS WORTH STORING
ARE WORTH MEASURING"
WITH A
LIQUIDOMETER
Tank Gauge**

WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

PROCESS INSTRUMENTATION

sensitivity is many times that of an ordinary Geiger-Mueller counter.

Description: Scintillation counter employs a 5819 photo-multiplier tube. Samples, placed in slide chamber of unit, emit radiation which strikes a phosphor. Resulting scintillation is detected by the photomultiplier tube. Sampling chamber can accommodate specimens up to 2" in diameter. Instrument is used with a standard scaler supplying high voltage.

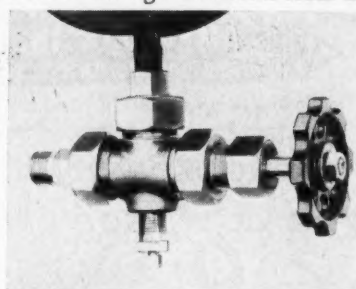
Source: Special Products Division, General Electric Company, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 2163 on handy form, pages 2 and 3.

Number of threaded connections for instrument installation now reduced to three . . .

series of instrument valves combines unions, nipples, tees, other fittings as integral feature

Uses: Valves are recommended for use with instrument and regulator piping, and are especially suitable for connecting pressure gauges, pressure transmitters, pump governors, etc., in piping systems. Handle water or gas.

Features: Valves can reduce the number of threaded connections required for installing instruments from the usual 10 needed to only 3. This is possible because unions, nipples, reducers, elbows, tees and drain valves are combined as an integral feature of the valve, making a space saving assembly.



Valve for instrument piping

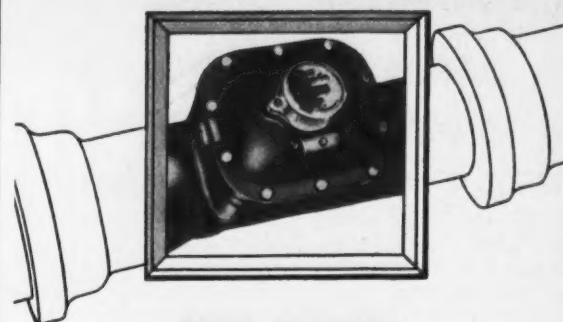
Description: Basic styles of valves being offered include in-line, offset, and in-line jacketed — each with either threaded or union outlets. Ratings for #60 Series: 3200 lb @ 100°F and 1200 lb @ 1000°F; #90 Series: 3200 lb @ 100°F and 1200 lb @ 1000°F (600 lb steam in jacket); and #40 Series: 1500 lb @ 100°F and 500 lb @ 1000°F.

Standard connections are 3/4" male inlet, 1/2" female top outlet, and 1/2" female bottom outlet (all NPT). Other connections are available.

Valves may incorporate a vacuum tail piece and stainless steel ball check for automatic shut-off in the event of a fracture in the instrument. Stem may be repacked while valve is in operation due to double-seating stem design. A quick closing valve stem with lever is offered. Seat can be reground by using the sleeve as a guide and, in addition, old seat can be replaced with a new one using a standard 5/8" socket wrench.

Pressure bleeder valve is available, making it possible to shut off instrument from vessel, and bleed confined pressure before breaking any connections. All valves can be supplied with an outside screw and yoke where required. Special metals of construction can be selected to fit specific applications.

Source: Instrument valves are a product of the Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass. . . or for more information check CP 2164 on handy form, pages 2 and 3.



TRUE PICTURE

OF WATER CONSUMPTION

BUILDERS PROPELOFLO METER gives you a true picture of actual flow through your main and auxiliary pipelines. This self-contained and self-operated propeller-type meter registers accurately and dependably each gallon or cubic foot as it passes the meter. It gives the information you need to check water costs — to stop water waste — to maintain your boilers, condensers, and air conditioning systems at top operating efficiency.

Some important Propelloflo features:

- High accuracy over wide range of flow
- "Venturi design" — Low loss of head
- Self-contained and Self-operated
- For pipelines 2" and larger — Reads direct
- Quality construction — Quality materials
- Easy to install — Easy to maintain

For Bulletins and engineering information, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Avenue, Providence 1, Rhode Island.

Builders makes a complete line of flow meters and controllers for liquids, steam, air, gas, and dry materials . . . mechanical and differential . . . including The Venturi Meter and Chlorinizers (chlorine gas feeders).

BUILDERS-PROVIDENCE
Instruments

When inquiring check CP 2165 on handy form, pgs. 2-3

When inquiring check CP 2162 on handy form, pgs. 2-3

CAMBRIDGE

pH INDICATORS and pH RECORDERS single — and multi-point

In addition to portable pH Meters, Cambridge makes Direct-Reading pH Indicators and Recorders for permanent installation. They are line-operated, accurate and provide trouble-free performance. The Recorder or Indicator may be located at any reasonable distance from one or several sampling points. The Glass Electrodes are placed in the vapor-tight housings of the clog-free sampling chambers.



Direct Reading pH Indicator
Control Panel

Send for Bulletin No. 910 T.

CAMBRIDGE pH EQUIPMENT

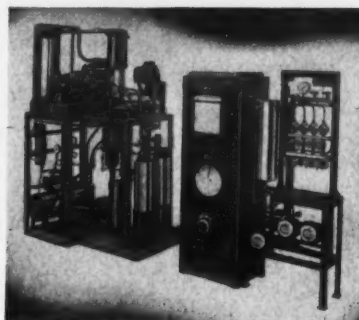
CAMBRIDGE INSTRUMENT CO., INC.
3706 Grand Central Terminal, New York 17

PIONEER MANUFACTURERS
OF PRECISION INSTRUMENTS

When inquiring check CP 2166 on handy form, pgs. 2-3

SUPERPRESSURE APPARATUS

Pilot Plant
designed and
fabricated by
Aminco for
Merck & Co., Inc.



With over 30 years of experience in the design and manufacture of Superpressure equipment, Aminco is best able to render you maximum assistance in problems involving pressures up to 100,000 psi. and temperatures up to 1000°F. Whether you require a single valve or a complete pilot plant, it will be to your advantage to buy Aminco, America's leading high-pressure apparatus.

Write for Catalog 406-X

REACTION VESSELS
SHAKING
MECHANISMS
VALVES & FITTINGS
PUMPS &
COMPRESSORS
INSTRUMENTS
TUBING
COMPLETE PILOT
PLANTS

Superpressure Division
AMINCO AMERICAN INSTRUMENT CO.
8010 GEORGIA AVENUE • SILVER SPRING, MARYLAND

When inquiring check CP 2167 on handy form, pgs. 2-3

*for greater safety and reduced downtime
watch corrosion where you can't see it*

MEASURES WALL THICKNESS FROM ONE SIDE

for instant check on progress of invisible corrosion inside tanks, pipes, other hidden locations —

NON-DESTRUCTIVE — ECONOMICAL

Ultrasonic Resonance measures accurately, instantly, 10 to 50 times faster than old-fashioned drill-and-plug methods — both visible and audible indications —

NON-DESTRUCTIVE
AUDIGAGE®
RAPID — ACCURATE

ACCURATE WITHIN 3%

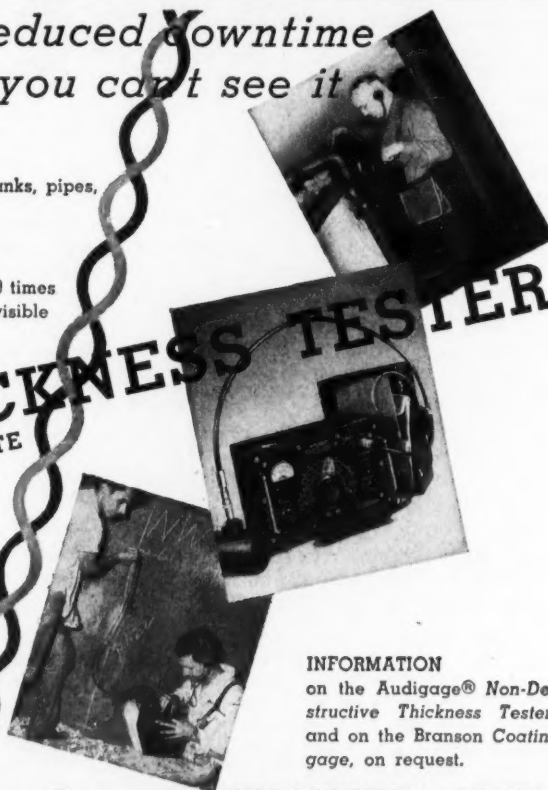
on non-porous materials from 1/16th-inch to 12 inches thick, with flat or curved surfaces; also detects laminar flaws. Effective on glass, most metals, plastics, etc. —

PORTABLE — SELF-POWERED — RUGGED

light and compact; welded-aluminum case, shock-mounted tubes and sturdy components, permit use anywhere in the field "without kid gloves" —

BRANSON INSTRUMENTS, Inc., Dept. CP, STAMFORD, CONN.

When inquiring check CP 2168 on handy form, pgs. 2-3



INFORMATION

on the Audigage® Non-Destructive Thickness Tester, and on the Branson Coating, on request.

PROCESS INSTRUMENTATION

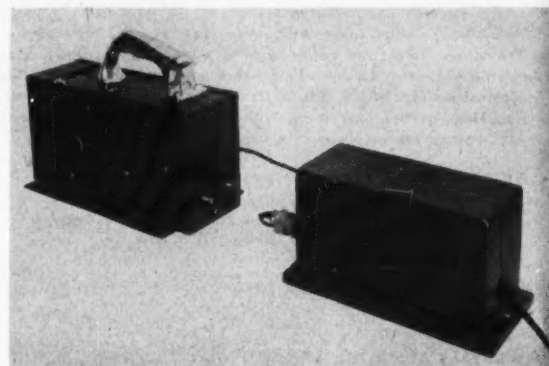
**Sheen of paints measured
by standard procedures
in 85° glossmeter . . .**

fully portable unit offered in models for battery, AC, or combination operation

Uses: Measures 85° specular gloss according to Method 611.1 of Federal Specification TT-P-141b. Designed especially for measurement of sheen of interior wall paints and camouflage paints.

Features: Glossmeter is maker's recent development. It is a completely portable unit. Battery-operated, AC powered, and combination models are available.

Description: Instrument consists of an exposure head with lamp, lens, and sensitive light meter. These



This model of portable glossmeter is supplied with constant-voltage transformer for AC operation. Other models are battery-powered, or combination

components are arranged essentially in the same manner as they are in maker's formerly announced 60° portable glossmeter. With the exposure head is a power supply — either a transformer or a battery.

Following models are furnished with two calibrated standards in case: 1) P34-85° (illustrated) is offered with constant-voltage transformer for AC operation; 2) P35-85° has exposure unit with cable for attachment to constant-voltage transformer (transformer is not provided); 3) P32 Dual 85° is completely contained in carrying case for either AC or battery operation; and 4) P33-85° is offered in carrying case for battery operation only.

Source: The 85° portable glossmeter is a development of Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda 14, Md. . . or for more information check CP 2169 on handy form, pages 2 and 3.

**Speeds to 48,000 rpm are
indicated or recorded
by hand instruments . . .**

tachometer and tachograph have accuracy of 1/2 of 1% at any point of scale

Uses: Hand tachometer is suitable for indicating speeds in the range 30-48,000 rpm, and 15-24,000 fpm. When a special adaption of this unit is attached to a recording mechanism, it becomes a portable, hand tachograph and records these speeds on a continuous strip of paper. Suitable for checking speed fluctuations, accelerations, decelerations, belt slippage, etc.

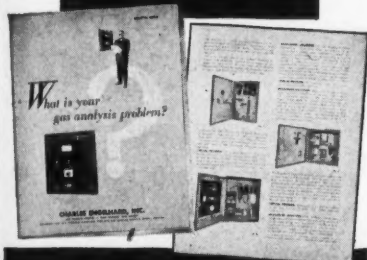
Features: Accuracy is 1/2 of 1% at any point of scale.

Description: Three models of this hand tachometer are offered for covering the speed ranges mentioned

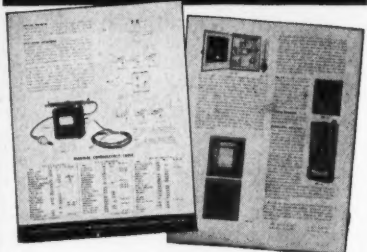
CHEMICAL PROCESSING

Want to know more about **GAS ANALYSIS?**

Read this
New 8-page
**ENGELHARD
BULLETIN**



Look at these
Data - Packed Pages



YOU WILL FIND a wealth of material on a wide range of gas analysis problems and their solutions in the new Engelhard 8-page illustrated bulletin. It explains how Engelhard equipment provides complete, sensitive, accurate analyses by the proven thermal conductivity method. The bulletin also contains a *valuable thermal conductivity table* that you will want to keep for handy reference. Write for your free copy today. Ask for Bulletin 800A.

Please send me FREE copy of Bulletin 800-A on Gas Analysis.

Name
Company
Address
City State X1234

CHARLES ENGELHARD, INC.
850 PASSAIC AVENUE EAST NEWARK, N. J.

When inquiring check CP 2170
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

above. Each model has a rotating gear shift which yields 5 over-lapping speed ranges within its overall range. Dial of tachometers is 3" diameter; overall length 5 1/2"; and weight 19 oz. Carrying case is provided.

Recording mechanism to which a special adaption of the above tachometer can be attached has two standard speeds: 1/4" per second and 1/2" per second. Drive is spring type, wound by means of a removable key. Records are made on rolls of chart paper 2-3/4" wide. Speed curve is drawn in rectangular coordinates—time units being marked horizontally and revolutions vertically. This is a more easily read record than polar types made by conventional instruments. Tachograph measures 10-3/4" long, 3 1/4" wide, and 4 1/2" high; weight is 3 1/2 pounds. Carrying case is also provided for this unit.

Source: Hand tachometer and tachograph are products of O. Zernickow Co., Dept. CP, 15 Park Row, New York 7, N. Y. . . . or for more information check CP 2171 on handy form, pages 2 and 3.

Handbook catalogs lab equipment

Laboratory equipment and supplies handbook lists over 25,000 items, including many improved methods and aids for chemical analysis and testing. Each item is completely described. It contains 986 pages plus index, and is bound in leather. Copies of Catalog 450 are available to labs of all kinds on letterhead request to Burrell Corporation, Dept. CP, 2223 Fifth Ave., Pittsburgh 19, Pa.

■ Accurate Temperatures AT A GLANCE WITH THE SIMPLIFIED PYRO OPTICAL PYROMETER



Any operator can quickly determine temperatures on minute spots, fast-moving objects and smallest streams. Completely self-contained. No calibration charts or accessories needed. An accurate, direct reading Pyrometer that pays for itself by helping prevent spoilage. Weighs 3 lbs. Available in 5 temperature ranges (1400° F. to 7500° F.). Ask for free Catalog No. 80.

NEW PYRO ALL-PURPOSE SURFACE PYROMETER

Here's good news for plants and laboratories who've told us they wanted a low-cost, rugged instrument that will give accurate surface and sub-surface temperature readings under all operating conditions. The NEW PYRO Surface Pyrometer is quick-acting, and fool-proof . . . no special experience needed to operate it. Big 4" dial. Catalog #180 gives full particulars.



The Pyrometer Instrument Company

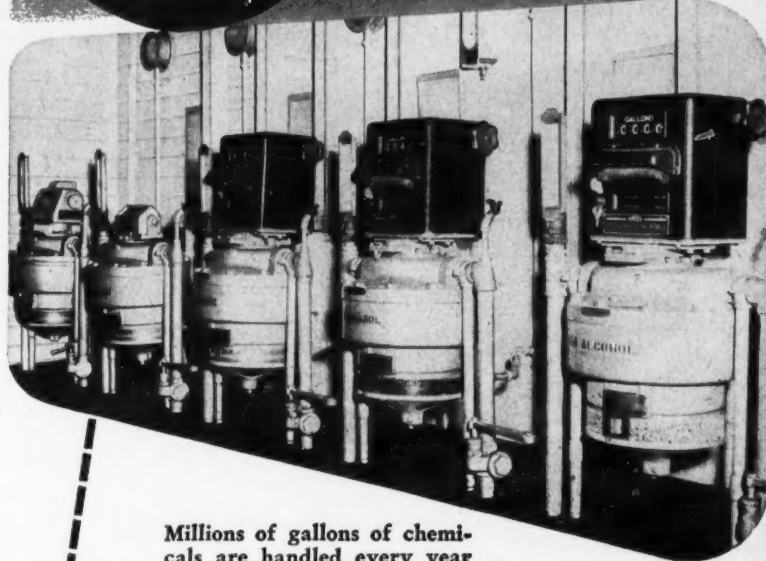
New Plant and Laboratory BERGENFIELD 28, NEW JERSEY

■ Manufacturers of Pyro Optical, Radiation, Immersion and Surface Pyrometers for over 25 years ■

When inquiring check CP 2173 on handy form, pgs. 2-3

STOP

LIQUID PROCESSING WASTE!



Millions of gallons of chemicals are handled every year by these Bowser meters in a large eastern chemical plant.*

Production has been increased by replacing calibrated tanks and tank scales with Bowser processing meters to permit pumping direct from field storage into mixers.

Greater accuracy and uniformity of product are assured . . . continuous counter readings provide precise inventory control.

* Name on request.

BOWSER STAINLESS STEEL XACTOS ARE HANDLING THESE AND OTHER LIQUIDS:

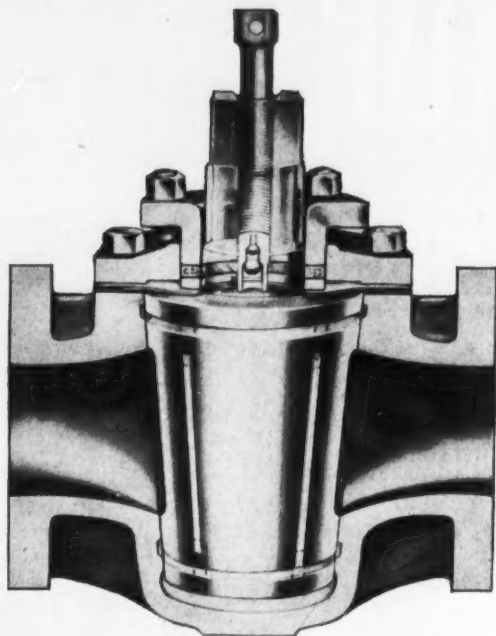
Acetic Anhydride	Calcium
Alum Solution	Bisulfite
Ammonium	Carbolic Acid
Chloride	Cellosolve
Ammonium	Acetate
Nitrate	Copper Nitrate
Ammonium	Copper Sulphate
Phosphate	Cresol
Ammonium	Cresylic Acid
Sulphate	Iso-Propyl
Amyl Acetate	Acetate
Anhydrous	Lactic Acid
Ammonia	Napthenic Acid
Aqueous Ammonia	Resin Alkyd
Arsenic Acid	Stearic Acid
Butyl Acetate	Tannic Acid

Write today for complete
information on Bowser
meters for liquid processing.

BOWSER, INC.
1325 Creighton Avenue
Fort Wayne 2, Indiana

When inquiring check CP 2174 on handy form, pgs. 2-3

There's no substitute for lubrication in valves

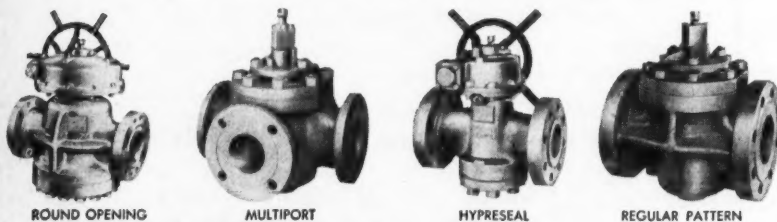


There are only two ways to get a seal between two metal surfaces within a valve:

- (1) Force the seating surfaces together by distortion, which often involves excessive stresses and galling.
- (2) Use a plastic sealing medium between the surfaces.

Leakage and cutting is certain to occur where valve seats are exposed because line fluid carries abrasive elements that wear down the surface or eventually cut it.

But by using a plastic lubricant seal on the *unexposed* tapered seat of the Nordstrom valve, abrasion and corrosion are resisted.



Nordstrom

LUBRICATED VALVES

... now automatically lubricated with **HYPERMATIC** lubricant

Write for descriptive literature

ROCKWELL MANUFACTURING COMPANY

400 North Lexington Avenue, Pittsburgh 8, Pa.

Atlanta, Boston, Chicago, Columbus, Houston, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle, Tulsa... and leading supply houses.



When inquiring check CP 2175 on handy form, pgs. 2-3

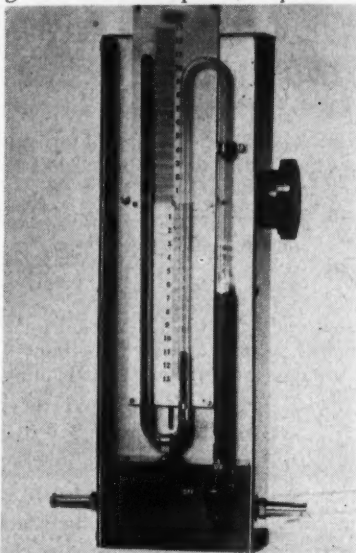
PROCESS INSTRUMENTATION

U-tube of manometer mounted to minimize breakage...

scale slides up and down with ease and it can be precisely adjusted; metal cock won't freeze

Uses: Pressure measurement.

Features: Manometer U-tube, the only part made of glass is protected against breakage. If it does happen to break, it is easy to replace. Scale is easily raised and lowered, and may be precisely adjusted. Precision-ground metal stopcock, impervious to mercury vapors, eliminates freezing encountered with glass cocks.



Knob at right raises and lowers
scale of manometer

Description:

The U-tube of the Teschner-Machlett manometer, with Bennert scale, has an interchangeable male joint that fits into its female counterpart in a metal tube attached to metal stopcock. The tube has a dust filter trap which reduces danger of contamination of the mercury.

Balance type chain device, conveniently controlled by a large plastic hand

wheel, permits easy, rapid and precise scale adjustment over small and large distances. Key slot is provided on the back of instrument for wall mounting.

Source: Product of E. Machlett & Son, Dept. CP, 220 E. 23rd St., New York 10, N. Y. . . . or for more information check CP 2176 on handy form, pages 2 & 3.

Low upkeep main feature of automatic flow controller...

good accuracy as well as rapid response are reported

Uses: For automatic control of flow.

Features: Low maintenance, high accuracy, and fast response are reported for the controller.

Description: Flow rate is measured by maker's Magna Clutch flow meter which utilizes a frictionless magnetic coupling between the float and the pen and control mechanism. Accuracy is attained by the large float and long float travel combined with frictionless design. Low maintenance is achieved by eliminating the principal source of trouble in conventional meters—stuffing boxes and pressure-tight bearings. "O" ring manometer seals replace gaskets. Manometer is fully accessible without disconnecting the pressure piping; there is only one moving part, the float, which can be easily removed.

In conjunction with this meter is a pneumatic controller which is equipped with fully adjustable automatic reset and proportional band adjustable from 0 to 175%. Controller is also built for minimum maintenance. Both

There's a Buffalo NIAGARA METER to Handle Almost Any Volume or Any Type of Liquid:



From $\frac{1}{30}$ to
1000 gallons

per minute can
be metered by
NIAGARA Meters.
Sizes range from
 $\frac{1}{2}$ " to 6" diameter.

For Oils,
Chemicals,
Cold or
Hot Water,
and Other
Liquids



Please send us information on the
complete line of Niagara Meters.

Liquid _____ of
Flow gpm. _____ Temp. _____
Name _____
Company _____
Address _____

BUFFALO METER CO.

2892 MAIN STREET
BUFFALO, N. Y.

When inquiring check CP 2177
on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

nozzle and restriction have sapphire jewels to prevent wear; restriction may be cleaned while in service; and either entire controller or just control head may be removed from case with little effort.

Further information on unit is contained in Bul. 950.

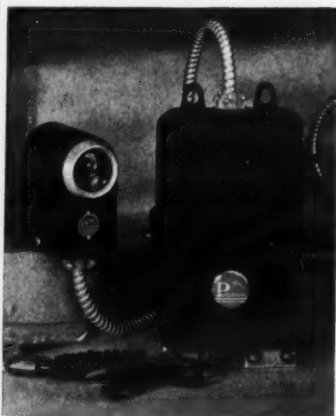
Source: Penn Industrial Instrument Corporation, Dept. CP, 3116 N. 17th St., Philadelphia 32, Pa., is the maker . . . or for more information check CP 2178 on handy form, pages 2 and 3.

No separate wiring needed for plug-in counter . . .

light source, electric counter, photoelectric scanner all operate from one lighting outlet

Uses: Counting of small, fragile, and light objects which are not heavy enough to actuate a mechanical counter; freshly painted objects; and heavy objects which might damage a mechanical counter.

Features: No wiring required. Control is powered through a plug-in cord that fits any standard lighting outlet. This also supplies the power for the light source, electric counter and photoelectric scanner, all of which have cables and plugs for connection to the control.



Counter set for up to 600 counts per minute

Description: Counter set P2C consists of a photoelectric control with phototube and light source located in small, remote housings. Bulletin PA 506, which describes this set, also discusses other counter sets, plug-in and permanently

wired types, having the phototube integral or separate from the control.

Set P2C can make up to 600 counts per minute. Distance between the photoelectric unit and light source should be held to 10 feet, but special light sources are available for longer range.

Source: Photoswitch Incorporated, Dept. CP, 77 Broadway, Cambridge 42, Mass., is the maker . . . or for more information check CP 2179 on handy form, pages 2 and 3.

Line of connectors and panels are used with thermocouples

Connectors and panels for thermocouples are described and illustrated in 4-page, 2-color folder. Equipment is made of materials which match characteristics of thermocouples. Shown are individual plugs and jacks; multiple connectors which simultaneously couple several leads; and panels which provide centralized control, connecting any thermocouple to any indicating, multiple point recording, or controlling pyrometer.

Connector Section 23 is issued by Thermo Electric Co., Inc., Dept. CP, Fair Lawn, N. J. When inquiring specify CP 2180 on handy form, pages 2 and 3.

Another Important Instrumentation Development by Beckman . . .



- * Greater Compactness
- * Higher Accuracy
- * Lower Sample Consumption
- * Maximum Convenience

THE NEW BECKMAN Flame Photometry Attachment

To meet the steadily growing interest in flame spectrophotometric methods, Beckman engineers have developed a new Flame Photometry Attachment that sets greatly advanced standards of compactness, convenience, accuracy and simplicity.

Used with the Beckman "DU" Spectrophotometer and standard oxy-hydrogen or oxy-acetylene equipment, it combines the unusually high accuracy and resolution of the well-known Beckman "DU" with the conveniences of flame spectrophotometric methods, providing an instrument capable of the quantitative determination of more than 40 elements, including heavy metals and rare earths, as well as the alkali metals.



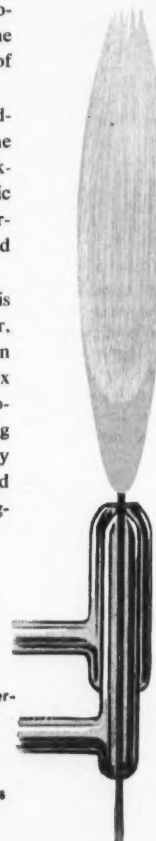
Other important features of this new Beckman development are outlined at right. Best of all, this new instrument is available at a new low price for equipment of this quality. Your nearest authorized Beckman Instrument dealer will gladly supply full details—or write direct!



SOUTH PASADENA, CALIF.

Factory Service Branches: Chicago • New York • Los Angeles

Illustration at right shows atomizer-burner actual size.



Outstanding Features of the New Beckman Flame Photometry Attachment

▶ Sample beaker is supported in a unique mechanism that swings the beaker outside the case for easy filling, or swings it back into position below the burner tube. Further, as the beaker is raised into position below the burner, it automatically tips so that sample solution is drawn from lowest point in beaker. Thus, complete analyses can be made with even extremely small samples.

▶ The atomizer requires only about 2 ml of sample solution per minute, and a sample of 1 to 3 ml is ample for determination of several constituents.

▶ Fuel consumption is very low—about 5 cu. ft./hr. for acetylene, 8 cu. ft./hr. for oxygen, 20 cu. ft./hr. for hydrogen.

▶ The hot flame, coupled with the high resolution of the "DU" Spectrophotometer, permits unusually narrow band widths to be used—less than 10 millimicrons for most determinations. Accuracies of 0.5% or better are obtainable.

▶ Sample concentration is unimportant (provided it is above the lower detectable limit) permitting maximum versatility and convenience in making analyses.

▶ Although the sensitivity of most elements is improved when the elements are in water solution, non-aqueous solutions are as easily handled as water. Even combustible solvents can be used—and in fact, organic solvents frequently increase sensitivity of the readings.

▶ The atomizer-burner, sample-positioning device, focusing mirror and adjustments are all unitized into a compact, cast-metal housing. All necessary regulators and gauges (except standard regulators on fuel and oxygen tanks) are conveniently mounted on a separate control panel.

Write for complete details on this important new Beckman advancement!

When inquiring check CP 2181 on handy form, pgs. 2-3

YOUR DREAM OF A LAB A REALITY AT METALAB



Send for the
NEW Complete
METALAB Catalog on
Laboratory Furniture
and Equipment

Dreaming of a new, beautiful Lab? Planning to add
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230 Duffy Ave., Hicksville, N. Y.
When inquiring check CP 2182 on handy form, pgs. 2-3

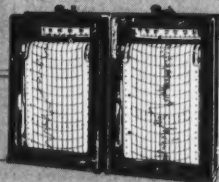
Your Newest Problem ... Air Pollution

Be alert to new ordinances governing the by-
products of your factory processes. Use factual
wind data in developing your plans for smoke
and fume abatement. Bendix-Friez wind equip-
ment, made by the manufacturer of the world's
foremost meteorological instruments, is in-
dispensable in studying the factors relating to
your smoke and fuel control.

Aerovane
Aerodynamic
Transmitter



Windspeed and Direction
Recorder permanently
mounted indoors.



FRIEZ INSTRUMENT DIVISION
OF BENDIX AVIATION CORPORATION
Baltimore 4, Maryland



When inquiring check CP 2183 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Announces oscillograph for
quantitative work...**

time and voltage calibration
provided

Uses: For indicating alternating-
current wave forms.

Features: Oscillograph is a quan-
titative, 10-megacycle cathode-ray
type. Time calibration is provided
for the horizontal sweep of the in-
strument, and regulated voltage cal-
ibration for vertical deflection.

Both time and voltage calibration are
attained by substituting a calibrating
signal for the input signal.

Description: Instrument is desig-
nated as Type 303. Y-axis, including
a fixed signal-delay line, provides
sensitivity of 0.1 peak-to-peak per
inch. Frequency response is down
3 db at 10 megacycles, with no slope
on the high-frequency range.

Response falls off slowly past the 10-
megacycle point, making the instru-
ment usable at frequencies consider-
ably higher than 10 megacycles. It
will synchronize stably on signals
higher than 15 megacycles.

Transient response of the Y-axis is
such that a pulse having a rise time
of 0.01 microsecond or faster will
be reproduced with a rise time not
exceeding 0.03 microsecond. No
high-frequency overshoot is observed
even on extremely steep wavefronts.

Both driven and recurrent sweeps
are variable continuously from 0.1
second to 5 microseconds. Sweep
length may be expanded to the equiv-
alent of 30", producing a sweep
speed of 6" per microsecond without
introducing non-linearity.

Y-axis amplifier provides 2.5" of
undistorted deflection of uni-directional
pulses. An equivalent 5" is
provided for symmetrical signals,
and may be positioned over the use-
ful area of the cathode-ray tube.

For either the timebase signal or
signals applied externally, the direct-
coupled X-axis amplifier provides
undistorted deflection which exceeds
the useful area of the screen.

Source: Instrument Division of
Allen B. Du Mont Laboratories, Inc.,
Dept. CP, Clifton, N. J., is the maker
... or for more information check CP
2184 on handy form, pages 2 and 3.

Save Time, Labor, Dollars!

TEST • STUDY • CONTROL
VISCOSITY

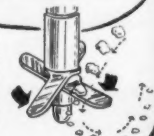
As Simply, Quickly and Easily
as Taking Temperature Readings

Just a flick of a switch, then read the Brookfield dial,
and you have your viscosity determination in centi-
poises. The whole operation, including cleaning up,
usually takes less than a minute.

Available in a variety of models suitable for ex-
tremely accurate work with both Newtonian and
non-Newtonian materials, Brookfield Viscometers are
portable and plug in any A.C. outlet — can be used in
Lab, Plant or both.

Write today for fully illustrated catalog showing
Brookfield Viscometers adaptable to any viscosity
problem from less than one to 32,000,000 centipoises.

**BROOKFIELD COUNTER-ROTATING
MIXER** — Two concentric, oppositely ro-
tating shafts, propeller equipped and driven by
two motors, produce an annular flow and up
to 48,000 scissor-like cuts/minute. Enable ex-
ceptionally fast, effective and efficient labo-
ratory mixing. Not a "stirrer." Write for
Brookfield MIXER brochure.



Brookfield ENGINEERING LABORATORIES, INC.
210 Porter St., Slough, Mass.

When inquiring check CP 2185 on handy form, pgs. 2-3

First and Foremost
in the
FLOATLESS CONTROL
FIELD

Floatless

**LIQUID LEVEL and
INDUSTRIAL CONTROLS**

— Write for Catalog —

B/W CONTROLLER CORPORATION

2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 2186 on handy form, pgs. 2-3

CHEMICAL PROCESSING

ACRAGAGE Shockstop!

Protects against
Pulsation
and Shock!

Eliminates
Snubbers—
It Can't Plug—

The Most Significant Pressure Gage
Development in 50 Years.

For the first time, a successful means of eliminating
the effect of pulsation and shock on pressure gage
mechanisms has been developed which DOES NOT
introduce an orifice or restriction in the pressure
connection.

It Can't Plug

FOR COMPLETE INFORMATION,
WRITE FOR CATALOG C-50-F

ACRAGAGE CO.

Formerly Clapp Instrument Co.
MILFORD, CONN.

ACRAGAGE PNEUMATIC TRANSMITTER

- Greater
Capacity
- A Cinch
to Service

"The Solid Front Acragage
and the
Moore Transmitter"

FOR COMPLETE INFORMATION,
WRITE FOR CATALOG C-50-F

ACRAGAGE CO.

Formerly Clapp Instrument Co.
MILFORD, CONN.

When inquiring check CP 2187
on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

OK for fluorescence tests at
2537 or 3660 Angstroms . . .

output frequency determined by interchangeable
heads on battery- and line-operated detectors

Uses: Suitable for daylight ultraviolet detection or
comparison at either 2537 or 3660 Angstrom units.
Usefulness covers rock, ore, and mineral identification;
petroleum detection; non-destructive materials testing;
sanitation; etc.

Features: The 2537- and 3660-Angstrom heads are
interchangeable on either the newer power-line-operated



Fluorescence detectors: battery-operated model (left),
power-line-operated model (right), and instrument box
(top) showing specimen holders

unit or on the older battery-operated unit. Heads can
be obtained separately for complete convertibility.

Description: Both power-line-operated (115v, 60c)
and battery-operated (2 flashlight cells) models of the
"Fluoretor" fluorescence detector are supplied with in-
tegral dark chamber, including 3-power magnifier and
six alternate specimen holders in a wooden instrument
box. Cold-cathode low-pressure discharge tubes used
in the instruments have neither ballasts, starters, nor
filaments. A rubber end-piece is available to exclude
light from sections of large surfaces being examined.
Until this announcement, only the 2537-A battery-
operated model has been available. Battery-operated
model weighs 2 lb, the other 1½ lb.

Source: Fluorescence detectors are a product of the
Menlo Research Laboratory, Dept. CP, PO Box 522-J,
Menlo Park, Calif. . . or for more information check
CP 2188 on handy form, pages 2 and 3.

Presents sensing units, other accessories

Thermocouples, radiation detectors, resistance bulbs, and
other accessories for indicating, controlling, and record-
ing instruments are presented in 42-page combined
catalog and data book. Equipment is profusely illus-
trated and specified.

Essential data pertaining to making, checking, selecting,
and ordering thermocouples; wire sizes and resistances;
and temperature-millivolt curves make this publication
useful in applying indicating, controlling, and recording
instruments. Bulletin TC-8 is issued by Wheelco In-
struments Company, Dept. CP, 847 W. Harrison St.,
Chicago 7, Ill. When inquiring specify CP 2189 on
handy form, pages 2 and 3.

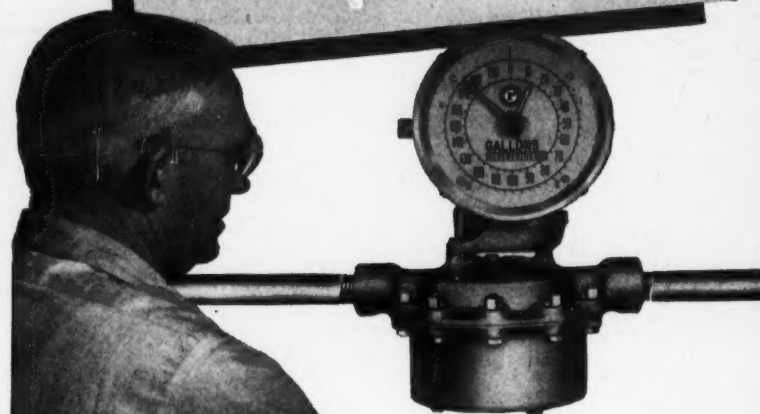
What do you want to measure?

**EMPIRE METERS ACCURATELY MEASURE
ALL THESE LIQUIDS AND MANY MORE**

Acetone
Alcohols
Ammonia, anhydrous
Ammonia, aqueous
Amyl Acetate
Asphalt, hot liquid
Beer
Benzene
Benzol
Brines
Butane, liquid
Carbon Tetrachloride
Caustic Soda solutions
Coal Tar
Cod Liver Oil
Cotton Seed Oil
Creosote Oil

Cresol
Cresylic Acid
Cutting Oil
Cyanide Solutions
Duco Thinners
Fuel Oil
Gasoline
Gin
Glycerine
Grease, lubricating
Hot Water
Kerosene
Lacquer Thinners
Linseed Oil
Lubricating Oil
Molasses
Naphtha

Oil, mineral
Prestone
Propane, liquid
Rum
Soap, liquid
Sodium Carbonate, solution
Sodium Hydroxide, solution
Toluene
Trichloroethylene
Thinner
Turpentine
Varnish
Water
Whiskey
Wine



Metering pays. In blending operations Empire
meters provide exact control over the amount
of liquid going into each batch. They save
time and money! It's much quicker to meter
than to gauge, weigh or stand around while
batch tanks fill. And the meter method is more
accurate. With Empire meters you can install
a closed piping system. You'll stop spilling,
evaporation losses, contamination—reduce fire
hazards. Get full facts on Empire meters now.
Use the handy coupon.

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MAIL TODAY

AS015-1

ROCKWELL MANUFACTURING COMPANY
Pittsburgh 8, Pa.

Gentlemen: I am interested in measuring _____

(Name of Liquid)

Pipe Size _____ " Working Pressure _____ psi, Temperature _____ °F max.

Please send full details and prices ☐ Have salesman call ☐

YOUR NAME _____

COMPANY _____

STREET _____ ZONE _____ STATE _____

CITY _____

When inquiring check CP 2190 on handy form, pgs. 2-3

FOR RUGGED
SERVICE and

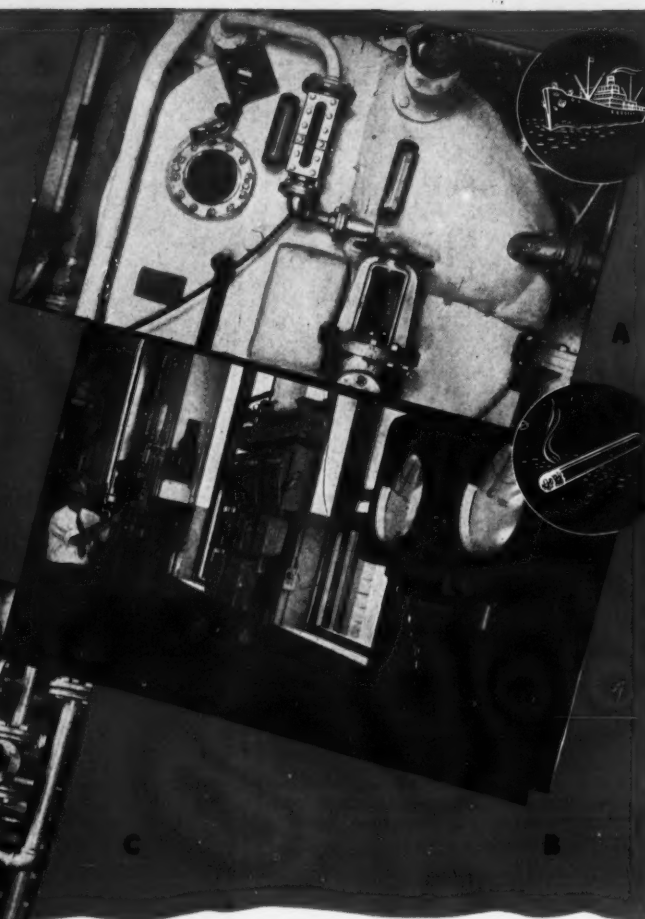
Hairline Control



A SK Fig. 1822 Armored Rotameter protects vital fresh-water supply aboard ship. Built to withstand heavy vibration, pressure and stresses and indicate water flow accurately.

B Rigid process control to insure quality cigarettes is accomplished by two SK Fig. 1891-EL Electronic Recording Rotameters, which measure flow of tobacco casing at cigarette factory.

C SK Fig. 1891 Rotameters measure flow of aromatic aldehydes in a chemical plant.



SK Rotameters are *engineered* to the job—will stand up under rugged service and give you hairline control. Used for measuring or controlling the flow of liquids and gases, these Rotameters are made in the wide variety of types and sizes demanded by today's complex industries.

The examples above give evidence of the way Standard SK Rotameters meet stringent requirements for strength, corrosion resistance and accurate control. Among the many *standard* types of SK Rotameters, made from a variety of materials, you can probably find the meter which fits your problem.

If not, experienced SK engineers can adapt or design a *special* Rotameter that's *job-engineered* to fit. Almost all of our standard Rotameters were designed just that way—to meet customers' unusual requirements for a versatile flow meter.

Put SK's problem-solving ability to work for *you*. Check the standard types of Rotameters available by writing for Bulletin 18-RA. If none of these meet your problem, write us outlining your special requirements.



SCHUTTE and KOERTING Company

Manufacturing Engineers

1173 THOMPSON STREET • PHILADELPHIA 22, PA.
JET APPARATUS • HEAT TRANSFER EQUIPMENT • STRAINERS • CONDENSERS AND VACUUM PUMPS • OIL BURNING EQUIPMENT • ROTAMETERS • FLOW INDICATORS • RADIAFIN TUBES • VALVES • SPRAY NOZZLES AND ATOMIZERS • GEAR PUMPS • DESUPERHEATERS

When inquiring check CP 2191 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Measures light values down to 1/10,000 microlumen . . .

line-operated photometers use electronic amplification; good linearity and stability, 4 measuring ranges

Uses: For measurement of extremely low light values — those down to one ten-thousandth of a microlumen. Specific applications include: light measurements through microscopes. . . scintillation measurements on crystals. . . brightness of fluorescent and luminescent paints. . . absorption spectrophotometry and flame photometry. . . direct emission spectrophotometry. . . fluorescence analysis of liquids and solids. . . densitometry on very small areas and high densities of photographic materials. . . many more.

Features: Perfect linearity and stability, 4-decade measuring ranges, and large-face meter are characteristic of this line-operated electronic photometer.

Description: Multiplier-Photometers Series 520 are light measuring instruments which operate with electronic amplification, using an electron multiplier tube as the light sensing element. Photo-multiplier tube converts light falling on its cathode into an electron current which is then successively multiplied within the tube by secondary emission at each of 9 additional electrodes. Current output of the multiplier tube is thus thousands of times higher than that of conventional phototubes.

Output of the photo-multiplier tube is further amplified by a high-gain 2-stage vacuum-tube amplifier and is finally registered on a long-scale indicating meter. Total amplification furnishes ultra-high sensitivity which permits reliable measurement of extremely low light values.

High sensitivity also make it possible to evaluate very thin pencils of light within narrow spectral bands; for instance, in color densitometry and spectrophotometry.

Search unit (housing the multiplier tube) is attached to the main unit of the instrument by flexible cable and connectors. Main unit (housing amplifier, indicating meter, power supply, and controls) is compact, sturdily built, completely portable, requires no particular care or skill in setting-up and operating, and is powered directly from AC lines.

Two models of the Series 520 photometer are offered. Model 520-A is intended primarily for density measurements. It has an indicating meter of logarithmic response. Top scale is calibrated in optical density, and the bottom is a photometric scale which reads light intensities in arbitrary units. Four range switches are provided. Full-scale deflection in most sensitive range corresponds to 0.2 microlumen. First division of photometric scale corresponds to 0.001 microlumen.

Model 520-M is intended for photometric measurements other than densitometry, and wherever highest sensitivity is required — sensitivity being 20 times that of Model 520-A. Top scale is a photometric scale, bottom is optical density. Single range switch provides 4 ranges. Full-scale deflection in most sensitive range corresponds to 0.01 microlumen. First division of photometric scale represents 0.0001 microlumen.

Complete details of each model, general descriptions, and accessories are covered in maker's Bulletin No. 360.

Source: Development of Photovolt Corporation, Dept. CP, 95 Madison Ave., New York 16, N. Y. . . . or for more information check CP 2192 on handy form, pages 2 and 3.

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

Uses sensing element output for ultimate control of temp, speed, flow . . .

potentiometer controllers have rapid response, simple operation

Uses: Employs electric-impulse output of such primary sensing elements as thermocouples, radiation detectors, resistance bulbs, etc., for ultimately controlling temperature, speed, flow, pressure, static strain loads, AC and/or DC voltage, etc. Instrument is recommended for installations where the use of "suppressed ranges" and a null type measuring system are required.

Features: Speed of response, simplicity of design, and ease of operation characterize these potentiometer controllers.

Description: Controllers are designated as Potentiots, and employ maker's "Electronic Link" for connecting the control system with the potentiometric method of measurement.

Desired control level is set by knob on instrument's face, which in turn positions the pointer on the large open scale (9½" long). This action also positions the contact on the slide wire which determines the potential of the primary element (or sensing unit) must produce to balance the measuring circuit.

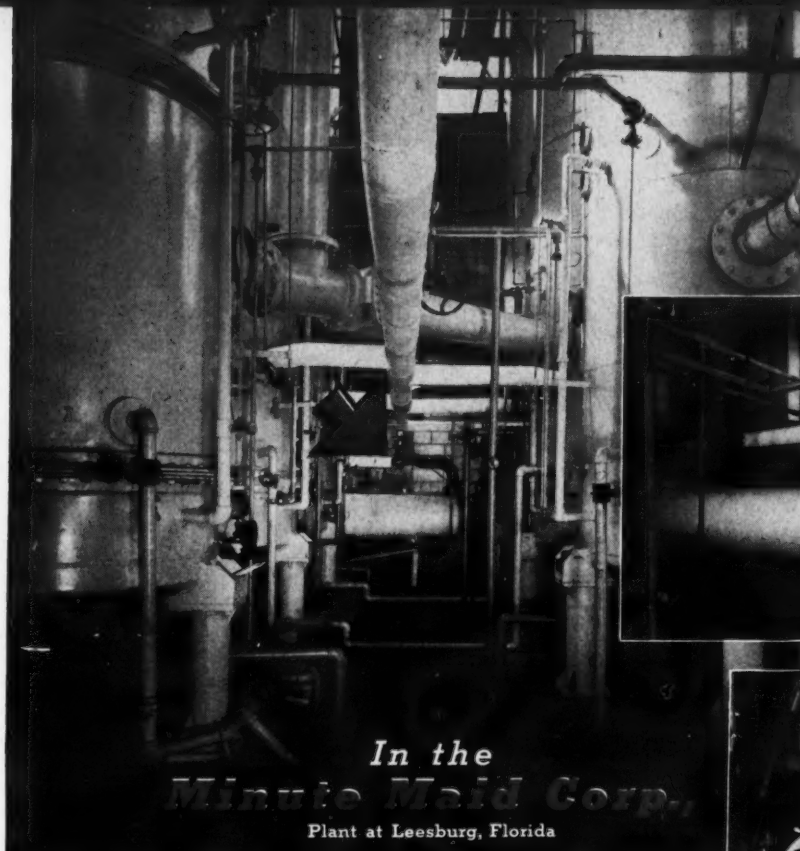
When measuring circuit is in balance, and the "Electronic Link" has automatically operated the relay to the "off" position—the slightest drop in the measured variable unbalances the electronic circuit and puts the control relay in "on" position, where it remains until the measuring circuit is again in balance.

A minute (.005") deviation of the pointer from the balanced position causes control action through the electronic circuit.

Compact standardizing unit allows instrument standardization in a matter of seconds. Cabinet has extra room for auxiliary switches or relays, and can be locked to prevent unauthorized tampering.

Source: Wheelco Instruments Company, Dept. CP, Chicago 7, Ill., is the maker . . . or for more information check CP 2193 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 2194 . . . see information request blank between pages 2-3.



In the
Minute Maid Corp.
Plant at Leesburg, Florida



TEMPERATURE CONTROL

Helps Regulate Processing of Citrus Fruit By-Products for Animal Feeds

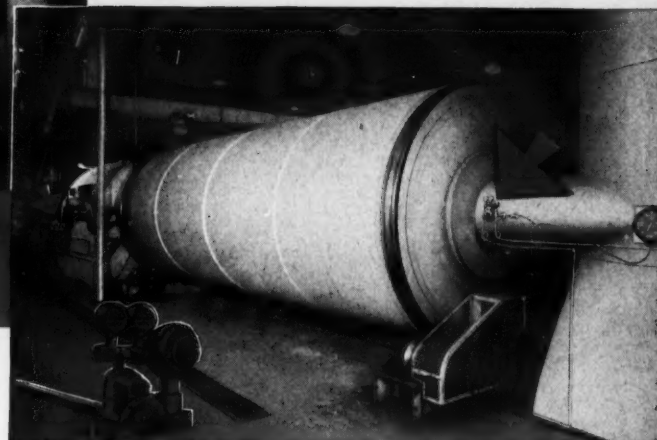
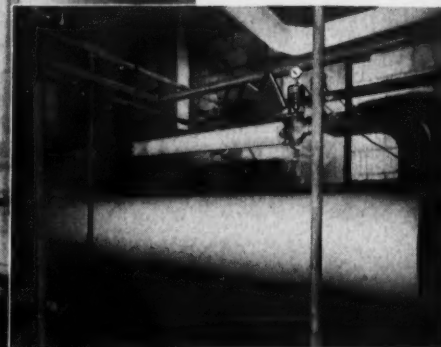
FUEL and LABOR SAVINGS are obtained in this efficiently managed plant of the Minute Maid Corp., by preventing losses of OVER-heating with Powers automatic control. Constant uniform temperatures also help to produce a more uniform quality product.

If you want to maintain any process or air conditioning equipment at a more constant uniform temperature or humidity, contact your nearest POWERS office for help in selecting the right control for your requirements.

With almost 60 years of experience and a wide variety of pneumatic and self-operated regulators POWERS engineers are well qualified to help you get the most value for your money. Phone our nearest office or write—

(MMC)

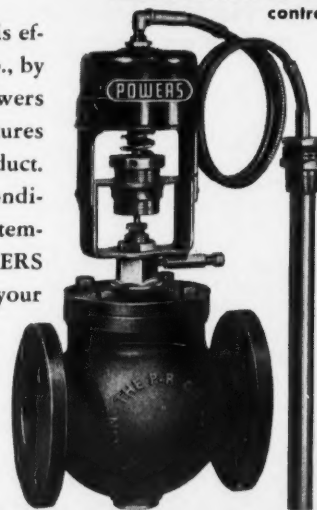
POWERS No. 11 Self-Operating TEMPERATURE INDICATING REGULATOR. Has easy to read 4" dial correctly gives temperature of pulp and liquid being heated before entering evaporators. Regulator valve controls steam supply to large heater shown below.



Above: POWERS Air Operated No. 10 TEMPERATURE REGULATOR controlling valves on Oil Burners and Dampers of HEIL CO. ROTARY DRYER.

Below:

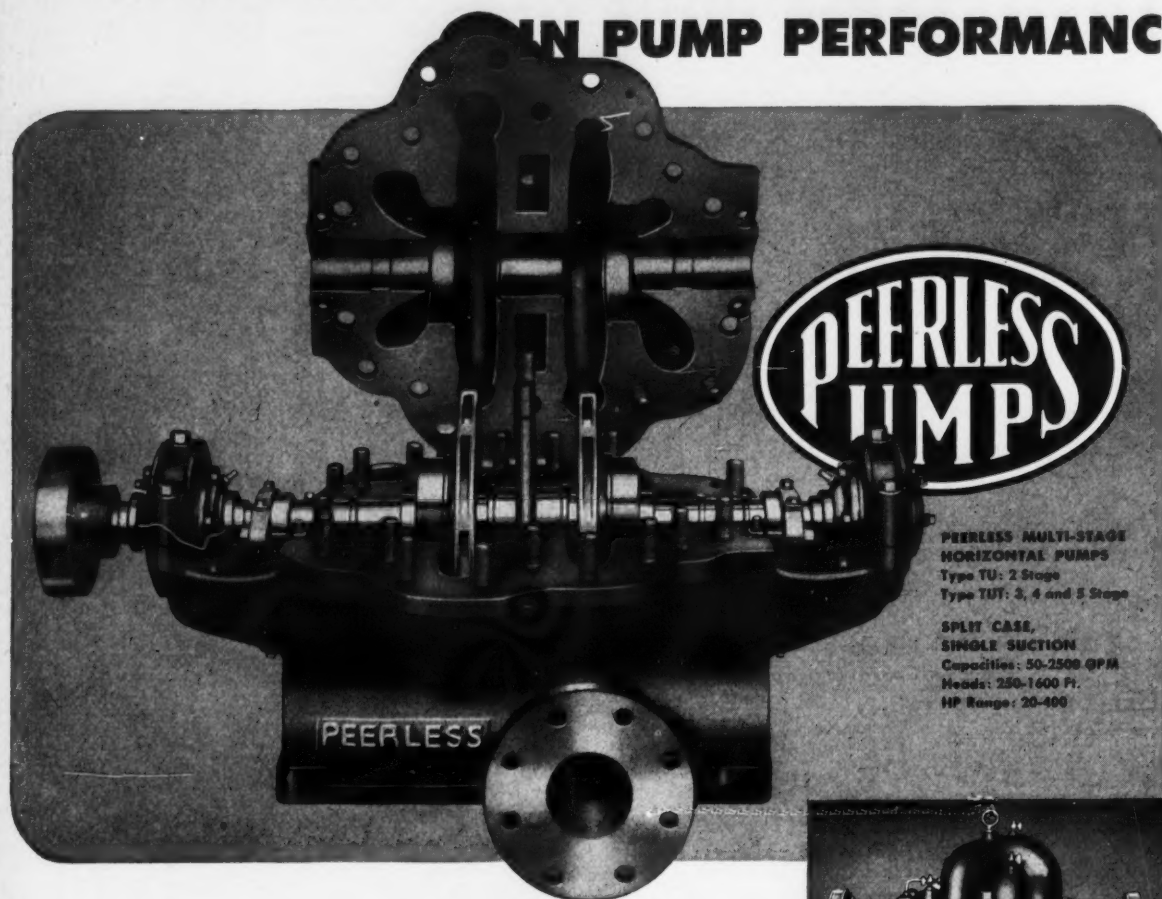
POWERS No. 11 Self-Operated TEMPERATURE REGULATOR automatically controlling steam supply to large double cylinder heater.



THE POWERS REGULATOR CO.

OVER 59 YEARS OF AUTOMATIC TEMPERATURE CONTROL • OFFICES IN OVER 50 CITIES • SEE YOUR PHONE BOOK

PEERLESS PROVIDES A PLUS IN PUMP PERFORMANCE



**PEERLESS MULTI-STAGE
HORIZONTAL PUMPS**
Type TU: 2 Stage
Type TUT: 3, 4 and 5 Stage

**SPLIT CASE,
SINGLE SUCTION**
Capacities: 50-2500 GPM
Heads: 250-1600 Ft.
HP Range: 20-400

HERE'S A DEPENDABLE, DURABLE AND RUGGED MULTI-STAGE PUMP FOR HANDLING HOT OR COLD LIQUIDS IN MOST PROCESS APPLICATIONS

Peerless Type TU and Type TUT multi-stage horizontal pumps squarely meet your requirements where moderate capacity and high head applications in handling boiler feed water and process liquids are involved. In general, these pumps are of horizontal, split-case design. They incorporate a number of features that provide a plus in pump performance without paying a premium on your investment.

For example: Peerless TU and TUT pumps are equipped with duplex angular contact thrust bearings, water cooled bearing housings, heavy stiff case rings, sleeves locked against impeller hubs, in-and-out cooling and sealing connections at stuffing box.

The return passages from discharge to suction of the impellers is the best method

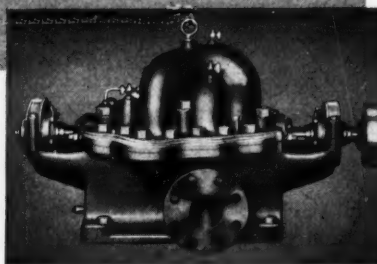
developed over a period of years for converting velocity into pressure between stages providing a definite improvement in efficiency.

The high pressure stuffing box on these pumps is under one stage pressure only, regardless of the net pressure developed by the pump.

The spacer bushings between stages are serrated with grooves throughout its length, are longer than competitive pumps thus making an effective seal between stage pressures.

Peerless Type TU and TUT pumps can be furnished in a variety of materials and alloys for use in most process applications.

Peerless Type TU and TUT pumps are described in Bulletin B-301. Write for your copy today.



Exterior view of Type TU 2-stage pump showing internal cross-over as furnished on 4" size and smaller.



View in booster station shows Type TUT 3-stage pumps each handling 325 gpm of process water at 600 ft. head.



PEERLESS PUMP DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, California, and Indianapolis, Indiana.

Offices: New York, Atlanta, Chicago, St. Louis, Phoenix, Fresno, Los Angeles; Dallas, Plainview and Lubbock, Texas; Albuquerque, New Mexico.

When inquiring check CP 2195 on handy form, pgs. 2-3

Briefs . .

Details valves for control systems

Seven-page article calls attention to three elements necessary for operating a control system satisfactorily. Article deals specifically with one of these, the control valve. Valve construction is described, and general requirements are stated and commented on.

Hydrostatic body test, seat leakage test, diaphragm chamber test, and test for valve characteristics are discussed. Testing methods are stated, as well as methods used in determining required valve size. Illustrated with 17 figures. (*"Instruments"*, Sept., 1950, page 896)

Cooling tower performance checked by heat balance

Five-page paper shows how a heat balance taken over a cooling tower can check the performance of tower operation. Data taken from tower operation are used in sample calculations. Illustrated with 5 figures. (*"Petroleum Processing"*, Sept., 1950, page 953)

Extraction and refining of shale oil

Five page paper tells briefly the nature and characteristics of shale oil and explains how it is obtained from shale. Details the method and equipment being used by the Bureau of Mines to refine the oil.

Analyses of typical Green River shale are tabulated. Several shale reports, other than those developed by Bureau of Mines, are briefly commented on. Tabulated comparison of mid-continent petroleum and shale oil is made. Commercial potentialities are briefly discussed. Illustrated with 8 figures and 2 tables. (*"Mechanical Engineering"*, Sept., 1950, page 707)

Theory, design, application of pneumatic conveying systems

Factual information on the theory, design and operation of pneumatic conveying systems is presented in a concise and easily understood manner. Three basic types of systems are discussed. Article consists of 3½ pages and 7 figures. (*"Industry and Power"*, Sept., 1950, page 82)

Thermodynamic properties of hydrogen peroxide

Structural data and vibrational frequencies are used to calculate the thermodynamic properties of hydrogen peroxide over the range 298.15 to 1500°K at 100° intervals. Equilibrium constants of a few important reactions involving hydrogen peroxide are also calculated from existing data on heat of decomposition and heat of dilution. Five pages and 6 tables. (*"Canadian Journal of Research"*, Sec. B, Aug., 1950, page 485)

Metals for high-temperature hydrogenation plants

Present extended use of high-temperature hydrogenation and the probable increase in such processing promoted this 7-page paper. Hydrogen action on low carbon steels is discussed. Examples of working pressures thought to

CHEMICAL PROCESSING

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

be safe are cited from industry. Certain alloy steels recommended for specific high pressure applications are given, and characteristics are shown graphically.

Effects of presence of nitrogen or carbon monoxide along with hydrogen are stated. Illustrated with 2 tables and 7 figures. ("Petroleum Refiner", Sept., 1950, page 104)

Pilot plant fractionation of cotton seed

Purpose of the process is the production of a cottonseed meal fraction essentially free from pigment glands and hulls, and a second fraction in which the pigment glands are concentrated. Plant equipment is described and processing operations are covered. Tabulates results of meal recovery by two processes of settling.

Oil recovered and characteristics determined are set forth. Possible commercial application is discussed. Article includes 8 pages, 12 figures, 5 tables. ("Journal of the American Oil Chemists' Society", Sept., 1950, page 336)

Sizing process equipment by statistical methods

Mathematical procedure which author uses instead of hunches for determining the proper size of processing equipment is presented in this 3 page article. Illustrated with 2 figures and 1 table. ("Chemical Engineering", Sept., 1950, page 112).

Use of flame-sprayed thiokol coatings

Materials were coated on steel to protect it from abrasion and corrosion when immersed in sea water. Preparation of a satisfactory coating material is stated and its method of application specified. Failures and successes are commented on. Article consists of 4 pages and 7 photos. ("Rubber Age", Sept., 1950, page 681)

Investigates 15 materials for plastic table tops

Results of an investigation of 15 commercial materials proposed for use as table tops are reported on in 5-page article. Investigation was for U. S. Navy. Methods used for testing are described; results are tabulated. Article includes 6 figures and 1 table. ("Modern Plastics", Oct., 1950, page 111)

Type S chlorine-caustic cells — optimum operating currents

Construction and operation of the latest Hooker cell are described in 5-page article. Cell characteristics at 12,000 and 24,000 amps are shown graphically. Capital investment for plants is calculated from tabulated basic data for Type S and Type S-3 cells. These figures are then used in calculating investment return for plants ranging from 50 up to 200 tons per day, with varied costs for steam and electric power. Illustrated with 7 figures and 3 tables. ("Chemical Engineering Progress", Sept., 1950, page 435)



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When inquiring check CP 2196 on handy form, pgs. 2-3

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PUMPS — Integral motor and coupled types from ¾ in. to 72 in. discharge and up.

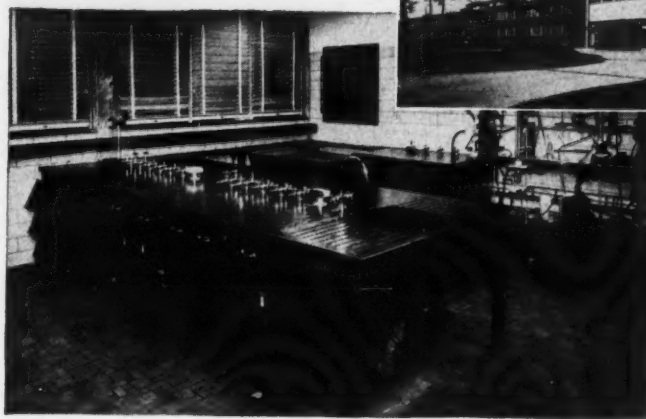


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Research and Development Department Laboratories, Secony-Vacuum Oil Company, Inc., at Paulsboro, N. J.—Architects: The Firm of Frederick G. Frost.

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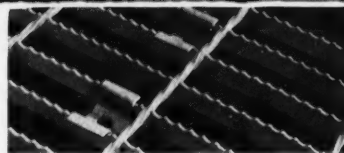
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Confident safety...

with **BLAW-KNOX Electroforged STEEL**
RUNNING BOARDS, BRAKE STEPS, PLATFORMS

Non-slip **TWISTED CROSS BARS** give extra strength and confident safety for workers. They're electrically forged right into the bearing bar for rigid one piece construction. Slightly roughened surface provides extra traction.



SERRATED BEARING BARS prevent slipping in any kind of weather. The "teeth" grip workers' shoes firmly to give the confidence that comes with sure-footedness. The clip, while very simple in design, provides a safe, sure connection that is exceptionally strong.

ELECTROFORGED INTO ONE PIECE
for Strength and Safety

Each panel is fabricated into one solid, permanently fused piece—each individual joint is electroforged into a union that is actually stronger than the surrounding metal. Electroforging insures long life *plus* elimination of accident-causing hazards!

WRITE FOR BULLETIN 2328 for complete details.
BLAW-KNOX DIVISION of Blaw-Knox Company
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX ELECTROFORGED STEEL GRATING

When inquiring check CP 2198 on handy form, pgs. 2-3

New

One layer of protective coat gives corrosion resistance

Corrosion resistance superior to conventional zinc coatings is reported for anti-corrosion coating described in 8-page, illustrated bulletin. Two formulations are available: Zincilate 100 which requires bake drying; and Zincilate 300 which does not.

Zincilate 100 is surface-penetrating, withstands dry temps to 750°F, and requires a rough, grease-free surface. Abrasion and impact resistance are excellent, although flexibility is relatively poor. Accelerated lab tests showed no failure at the equivalent of 20 years' ordinary exposure.

Zincilate 300 is non-penetrating, withstands dry temps to 450°F, and requires only a grease-free surface. Abrasion resistance is considered excellent but somewhat inferior to Zincilate 100. Flexibility is good; it can be applied to very thin gauge metal and to articles to be formed after application. Accelerated lab tests showed life expectancy of at least 15 years.

Coatings can be applied by conventional brush, dip, or spray methods. Only one coat is needed for maximum protection. Coatings are self-healing, and can be made anti-fouling in marine applications. Protection is *not* the result of conventional anodic (or "self-sacrificing") action; coatings' long life is attributed to this factor.

Descriptive bulletin presents case histories; complete specifications for both formulations; data on surface preparation and methods of application; and an offer of providing process engineers to investigate corrosion problems and supervise applications. Bulletin 100 is issued by Industrial Metal Protectives, Inc., Dept. CP, 401 Homestead Ave., Dayton 8, O. When inquiring specify CP 2199 on handy form, pages 2 and 3.

Presents uses, properties of synthetic organic chemicals

Sixteen-page booklet presents applications and physical properties of over 250 synthetic organic chemicals. Data is in tabular form. "Physical Properties of Synthetic Organic Chemicals", 1951 edition, is issued by Carbide and Carbon Chemical Division of Union Carbide and Carbon Chemical Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2200 on handy form, pages 2 and 3.

Specifies right-angle geared pump drives

Descriptions of right-angle geared pump drives and their application to vertical turbine pumps is the subject of 8-page illustrated bulletin.

These drives are ideal for service where electricity is not available; where natural gas, gasoline, diesel, or steam power is more economical; or where the added security of stand-by power is desired in case of electrical power failure. Heads are offered in 9 sizes, in ratios to 11:10, 1:1, 1:2, 2:3, 3:4, and 4:7, and in horsepower ratings from 3 to 300.

Bulletin describes construction features of gear head, and includes complete sectional drawings and dimensions; details of flexible shafts for connecting driver to pump head; horsepower ratings of various size heads;

CHEMICAL PROCESSING

Literature

and data on combination heads. Suggested methods of installation are shown in station arrangement sketches.

Bulletin B-140-1 is issued by Peerless Pump Division, Food Machinery and Chemical Corporation, Dept. CP, 301 West Avenue 26, Los Angeles 31, Calif. When inquiring specify CP 2201 on handy form, pages 2 & 3.

System keeps record of power output

Method for accurate and rapid measurement of useful power with a check on reactive power to prevent overloading of generators is described in 4-page data sheet. System provides continuous record of power output of individual generators, station, and system total.

Data sheet 9.1-3 is issued by Minneapolis-Honeywell Regulator Company, Industrial Division, Dept. CP, Philadelphia 44, Pa. When inquiring specify CP 2202 on handy form, pages 2 and 3.

Profiles water treatments

Illustrated, 12-page booklet serves as a guide to correct water treatment. It covers complete scope of water treatment for every condition and need, explaining why various water troubles occur and how they can be eliminated.

Treatments listed prevent scale formation, corrosion, foaming, and embrittlement in boilers; corrosion in steam and condensate lines; scale formation and corrosion in feedwater heaters, hot and cold water lines, cooling systems, and washing equipment; carbonate deposits in filter beds; algae growth; and red water. Also covered are supplementary treatments for lime-soda softened, zeolite softened, and deionized water.

Bulletin 551 is issued by Elgin Softener Corporation, Dept. CP, Elgin, Ill. When inquiring specify CP 2203 on handy form, pages 2 and 3.

Illustrates, specifies regulating valves

Combining 4 separate bulletins in 1, catalog specifies lines of thermostatic valves, float valves, back-pressure valves, and reducing valves. All are illustrated by cutaway or exploded drawings, and are fully specified. Many applications are recommended for specific models.

"Automatic Regulating Valves" is issued by Klipfel Manufacturing Co., Division of Hamilton-Thomas Corp., Dept. CP, 1000 Weller Ave., Hamilton, O. When inquiring specify CP 2204 on handy form, pages 2 and 3.

Presents five tackifiers for natural, neoprene latices

Five tackifiers presented in 3-page release are emulsions of synthetic resins, used with natural and synthetic rubber latices in formulating a wide variety of adhesives. They increase tensile strength, tack, and specific adhesion of latex used.

Three tackifiers are for natural rubber latices; other 2 are for neoprene latices. Data Sheet A39 is issued by American Resinous Chemicals Corporation, Dept. CP, 103 Foster St., Peabody, Mass. When inquiring specify CP 2205 on handy form, pages 2 and 3.

BROWN FINTUBE Thermo-Flo TANK HEATERS



easy to install in new — or existing — tankage



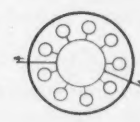
Single
Heater
Installation



Heaters
Manifolded
on the Outside



Heaters
Manifolded
on the Inside



Heaters
Manifolded
on the Inside



Heater
Mounted on
Roof Manhead

Users report that the cost of a group of Brown Fintube Thermo-Flo Tank Heaters — plus their installation — is less than the cost of just installing a bare pipe heating coil of equivalent capacity.

● Brown Fintube Thermo-Flo Tank Heaters are vastly superior to the old method of heating with a coil of bare pipe installed in the bottom of the tank. Thermo-Flo Heaters mount vertically, practically eliminating any depositing on the tubes. They avoid heating through a layer of sediment, and set up a thermal flow or siphon within the tank that assures thorough, rapid heating, avoiding stratification.

Thermo-Flo Heaters are compact units. They pass through a standard manway with ample clearance. They can be installed quickly; disconnected easily; and cleaned or repaired outside the tank.

The TF-20 Heaters, pictured above, have 265 square feet of surface. They are highly endorsed by operating and maintenance men, built in large quantities and are moderately priced. Available in mild steel, stainless steel, monel, inconel, aluminum, admiralty and other non-ferrous alloys to meet any requirement.

Write for Bulletin No. 491. It gives full details.

THE BROWN FINTUBE CO.
ELYRIA, OHIO

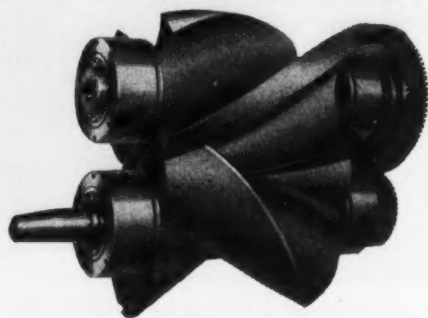
FINTUBE
HEAT TRANSFER
PRODUCTS

When inquiring check CP 2206 on handy form, pgs. 2-3

The STANDARDAIRE PRECISION BUILT Axial Flow BLOWER

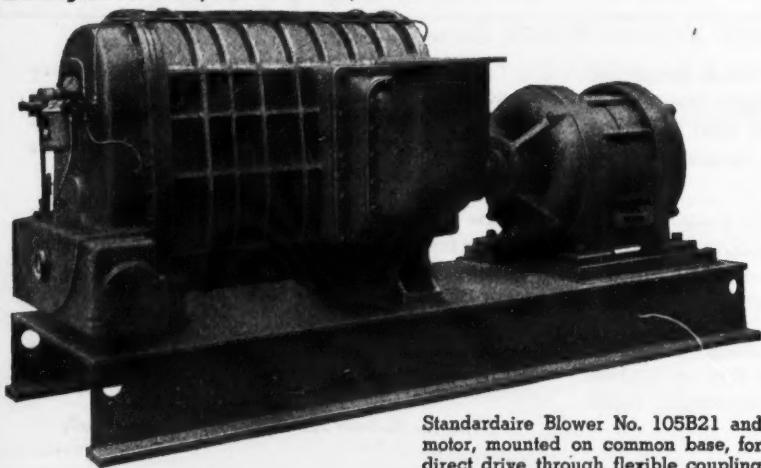
Features Two More Vital Components:

PRECISION ROLLER BEARINGS—spherical type are used on the fixed ends of the rotor shafts and a cylindrical type on the floating ends. With such a design free aligning action of the rotor shafts is assured and specific speed, load, and service requirements are easily met. In addition, this bearing construction fully compensates for any housing distortion which might occur due to temperature differentials.



LABYRINTH TYPE OIL SEALS—Bearings and gears are lubricated by a spray of filtered oil. The oil is controlled by a balanced pressure, labyrinth type seal which gives complete oil control and assures absolutely clean air delivery under all operating conditions.

Such features as precision bearings—frictionless oil seals—hardened, shaved, helical gears—contribute immeasurably to the efficient and dependable performance of the Standardaire Blower—A Modern Machine with Superior Operating Characteristics. For further information write The Standard Stoker Company, Inc. Dept. C-32, 370 Lexington Avenue, New York 17, N. Y.



Standardaire Blower No. 105B21 and motor, mounted on common base, for direct drive through flexible coupling to deliver 3200 c. f. m. at 1750 r. p. m.

THE STANDARD STOKER CO. • INC

Standard Stoker



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When inquiring check CP 2207 on handy form, pgs. 2-3

NEW LITERATURE

Chemicals condition aqueous systems

Eight-page bulletin describes and specifies various chemicals for conditioning aqueous systems. Chemicals control scale, inhibit corrosion and algae, absorb dissolved oxygen, and reduce acidity.

"Wright Chemicals for Conditioning Aqueous Systems" is issued by Wright Chemical Corporation, Dept. CP, 627 W. Lake St., Chicago 6, Ill. When inquiring specify CP 2208 on handy form, pages 2 and 3.

Pictures and describes batch pressure filters

Well-illustrated bulletin offers latest information on line of batch pressure filters with 1½-5 to 480-1000 sq ft of filter area. Exact area for each model is determined by leaf spacing.

Filter features individual sight glasses which enable operator to check clarity of filtrate coming from each leaf, and to note and cut out of service any leaf showing a leaky cloth.

Containing 4 pages, Bulletin 114 is issued by Oliver United Filters Inc., Dept. CP, 33 W. 42nd St., New York 18, N. Y. When inquiring specify CP 2209 on handy form, pages 2 & 3.

Alloy steel strengthens bucket elevator parts

Two-color catalog describes wheels, buckets, and chains for bucket elevators in its 4 pages. Parts are of alloy steel construction and, according to maker, give exceptionally long service in handling all types of bulk materials — sticky, abrasive, or hot.

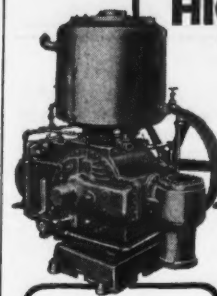
Catalog 10-B is issued by Beaumont Birch Company, Dept. CP, 1505 Race St., Philadelphia 2, Pa. When inquiring specify CP 2210 on handy form, pages 2 and 3.

Tells how to forecast business trends

Paper-bound booklet on forecasting sales and business trends in chemical process industries is an offset, 6½ x 10", 135-page publication.

Chapters include nature and methods of forecasting; applications for specific methods; techniques of long-range forecasting; advantages and disadvantages of each method; and statistical data needed.

Authors are Robert S. Aries and William Copulsky. To obtain "Sales and



HIGH VACUUM is "SUCKER STUFF" for BEACH-RUSS Vacuum Pumps

- **Faster Pump Down**
- **Lowest Pressures**
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Whether it's in chemical processing such as distillation, extraction or leaching; metallizing or coating; clay dewatering, electronic work or vacuum pick-up-and-place, position-and-hold or feeding of sheets, or other vacuum machine operations, Beach-Russ Single Stage Pumps provide the required low pressure fast and steadily. Two types of pumps are available:

Type SS Rotary Pumps for pressure to 5 mm. Hg. absolute on dry and semi-wet work. Capacities—6 to 375 c.f.m.

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Let Beach-Russ Pumps improve your vacuum operations. Write for Catalog.

BEACH-RUSS CO.

46 Church St.,

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When inquiring check CP 2211 on handy form, pgs. 2-3

No More Frozen or Galled STUDS
(even at 1800 F.!) Try this Amazing
Money Saver.

FREE Test Sample
of the NEW FEL-PRO

CUT costly stud breakage,
heater dismantling time,
pitting of metal surfaces!

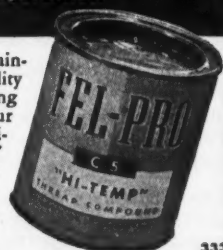
We'd like to send you a free sample of the new Fel-Pro C-5 "Hi-Temp" ThreadCompound to try on your toughest thread compound problems, including alloy and stainless steels. Then you can see the amazing, money-saving results being obtained by the nation's largest refineries, utilities and process industries. Fel-Pro's exclusive Colloidal-Copper formula keeps metal parts separated, regardless of temperatures. Its neutral action solves the alloy and stainless steel pitting problems. One utility company reports that heater dismantling time has been cut from two days to four hours, by the use of Fel-Pro C-5 "Hi-Temp". Why not see what "Hi-Temp" can do for you... get your free sample and complete data sheet—write today!

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1513 Carroll Avenue, Chicago 7, Illinois

C-5
"HI-TEMP"
THREAD
COMPOUND

Eliminates Pitting of Stainless and Alloy Steels at all Temperatures!

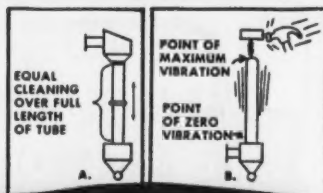


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When inquiring check CP 2212 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**FOR
MAXIMUM
CLOTH
CLEANING
EFFICIENCY**



DAY "Autoclean" DUST FILTER

Overall cloth cleaning efficiency is assured with the DAY "Autoclean" Dust Filter because its reverse air jet mechanism cleans each tube *continuously and uniformly* (See A). Its action is positive, yet gentle enough so that highest quality felt filtering cloth is used.

Tougher cloth with poorer filtering qualities must be used in rapping type filters. Cleaning effectiveness varies widely from vibration point to where cloth is attached to filter (See B).

Other DAY Advantages

- Continuous-Automatic Operation
- Constant Air Volume
- Separated Dust Streams
- High Air-to-Cloth Ratios

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Branch Plants in Ft. Worth, Buffalo and Welland, Ontario



NEW LITERATURE

Business Forecasting in Chemical Process Industries", remit \$5 direct to Chemonomics, Inc., Dept. CP, 400 Madison Ave., New York 17, N. Y. When inquiring specify CP 2215 on handy form, pages 2 and 3.

Soldering guns contain built-in lights

One-page catalog contains data on 4 models of soldering guns, 2 for light and 2 for heavy duty applications. Tips heat in 5 seconds. Guns are available in either single- or dual-heat styles, with built-in spotlights that eliminate shadows on work.

Soldering Gun Catalog is issued by Weller Electric Corporation, Dept. CP, 808 Packer St., Easton, Pa. When inquiring specify CP 2216 on handy form, pages 2 and 3.

Presents packing data

Self-lubricating, molded, and sheet packings — both standard and special — are covered in detailed, 20-page catalog that points up application, structure, and performance of each.

Specifications and handy selection charts are included in Catalog PC-101, issued on letterhead request to Greene, Tweed & Co., Dept. CP, North Wales, Pa.

Presents 48 pages of O-rings

Comprehensive, 48-page catalog lists physical data for O-rings. Types include 1) industrial rings meeting JIC standards for air, water, and hydraulic service; 2) special formulations for specific applications; and 3) special grades for extreme requirements of temperature, fuel resistance, etc.

Ten pages are devoted to general topics, including compounds, characteristics, applications, installation, gland design, and dimensioning. Catalog 903 is issued by Parker Appliance Company, Dept. CP, 17325 Euclid Ave., Cleveland 12, O. When inquiring specify CP 2217 on handy form, pages 2 and 3.

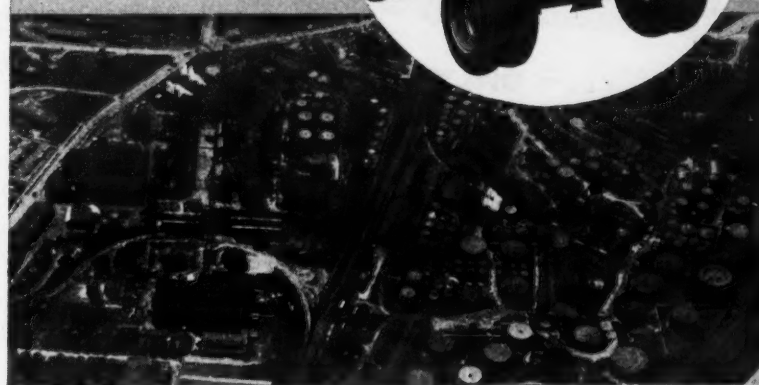
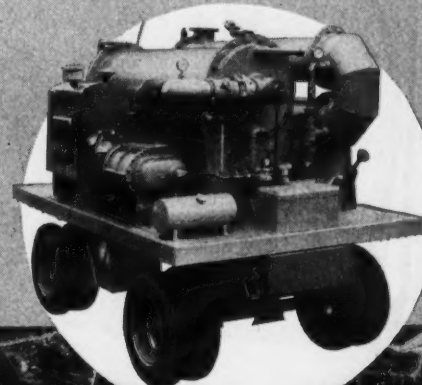
Annual report tabulates wood preservation

Thirty-two-page booklet tabulates quantity of wood treated, and preservatives used in the United States in 1949. "Wood Preservation Statistics" is issued by American Wood-Preservers' Association, Dept. CP, 839 Seventeenth St., N. W., Washington 6, D. C. When inquiring specify CP 2218 on handy form, pages 2 and 3.

FIRE PREVENTION

plus INSURANCE SAVINGS

means
2-way dividend
with R-C Inert
Gas Generators



Savings in insurance premiums of \$6,000.00 per month, and reduction of 500 different policies to three, were obtained by one extraction processor, due to the elimination of fire and explosion hazards in his three plants, essentially aided by R-C Inert Gas Generators.

Admitting that this instance is exceptional because of the size of the plants, the amount of insurance, and other factors, nevertheless it is apparent that both large and small companies may make important savings in insurance costs, and provide improved protection against business interruption and property damage, where explosion

and fire hazards must exist in their processing.

Through the use of inert gas, economically generated by R-C units, hazardous plant locations can be made safer against explosion and fire, thus proving again that "an ounce of prevention is worth a pound of cure". Portable units are readily movable from one plant to another, or stationary units can be installed where such hazardous conditions must be continuously contended with.

Roots-Connersville has made many successful installations. Ask us to send you Bulletin 100-B-14. There is no obligation.

ROOTS-CONNERSVILLE BLOWER CORPORATION
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ONE OF THE DRESSER INDUSTRIES



When inquiring check CP 2219 on handy form, pgs. 2-3

Free TIP on TOP service in corrosion resistance

DURCO TYPE F TEFLON LINED PLUG VALVE Corrosion Resisting

Amazing Teflon Liner plus sound DURCO design make the Type F a plug valve you should know about. Bulletin 647 gives complete information. Available now.

Write today to:



THE DURIRON COMPANY, INC., Dayton 1, Ohio

When inquiring check CP 2214 on handy form, pgs. 2-3

DECEMBER, 1950

Custom Built STAINLESS STEEL EQUIPMENT...



...is ONLY AS GOOD AS
ITS FABRICATOR

From the minute you decide on a made-to-order stainless steel vessel, you're in the hands of a fabricator. In fact the selection of your fabricator is generally one of your big problems.

It's more than a question of following blueprints. Stainless steel is a difficult alloy to work. It "acts up" during fabrication. In cutting, forming, welding and even in finishing, your fabricator must know how to guard the corrosion resistance and strength of the alloy. His plant must be specially equipped for working with stainless steel. The longer his experience, the more help he'll give you in building vessels that meet your requirements.

We work exclusively with stainless steel and alloys. Our plant is specially tooled to fabricate this metal. Our engineers and mechanics are particularly trained for the work. Why not consult us when you plan your next stainless steel vessel?

S. BLICKMAN, INC., 712 GREGORY AVE., WEEHAWKEN, N. J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

CORROSION RESISTANT PROCESSING EQUIPMENT



When inquiring check CP 2220 on handy form, pgs. 2-3

Page 72

NEW LITERATURE

Sixteen-page book simplifies industrial electronics

Sixteen-page book on industrial electronics is especially written to simplify the subject for easy understanding. Illustrations show how to apply electronics to countless operations to save time and labor; to perfect and simplify production; to guard property; and to control light, liquids, and measures.

Bulletin E is available on letterhead request to Worner Electronic Devices, Dept. CP, Rankin, Ill.

Redesigned speed reducer data occupies 36 pages

Two lines of redesigned worm gear speed reducers are specified in 36-page catalog. Principal difference between lines is that in one the worm is below the gear, operating directly in oil bath; while in the other, the worm is above the gear, and the gear dips in oil bath.

Bulletin includes dimensions, efficiency curves, drawings, rating tables, and photographs; text contains much general information and advice. Bulletin 130 is issued by The Cleveland Worm & Gear Company, Dept. CP, 3261 E. 80th St., Cleveland 4, O. When inquiring specify CP 2221 on handy form, pages 2 and 3.

Tells how air foam fights fires

Illustrated brochure on fire extinguishing equipment contains 24 pages, measures 8 1/2 x 11". It describes air foam, methods of application, high and low expansion types of foam compound, specifications and operating characteristics for 5 sizes of portable playpipes, mobile and stationary foam proportioning tanks, and installations of various types. A selector valve for use with wetting agents is also shown.

"Air Foam Equipment" is issued by Pyrene Manufacturing Company, Dept. CP, 560 Belmont Ave., Newark 8, N. J. When inquiring specify CP 2222 on handy form, pages 2 and 3.

Catalog offers 20 items of lab equipment

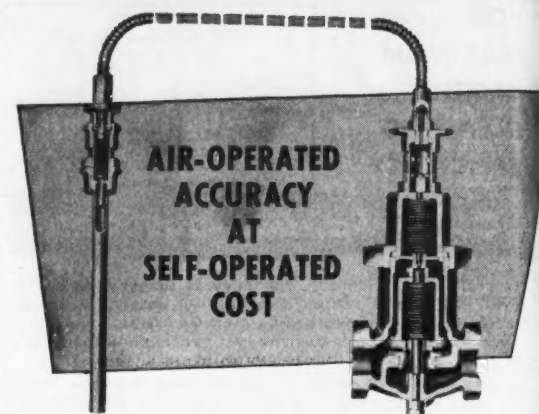
Sixteen-page catalog lists 20 items of laboratory equipment. Featured are a Varicell which eliminates storage batteries; quadrant culture plate; flask with insulated top to prevent burns; and vacuum oven heated by radiation. Also included are microscope lamp; mortar and pestle; tubular filter; sponge; and ASTM-certified thermometer testing set.

All items are illustrated. "What's New for the Laboratory", 11th edition, is issued by Scientific Glass Apparatus Co. Inc., Dept. CP, Bloomfield, N. J. When inquiring specify CP 2223 on handy form, pages 2 and 3.

How to properly design steel castings

Steel casting design booklet comprises a thorough, 32-page primer of fundamental practices, useful to both designer and foundryman. Emphasis is directed particularly to considerations looking to reduced production costs, elimination of unnecessary weight, improved casting quality, and castability.

Major portion of booklet is devoted to detailed discus-



AIR-OPERATED
ACCURACY
AT
SELF-OPERATED
COST

Self-operated Farris Stacon Temperature Regulators* make possible unheard-of control accuracy—to within plus or minus 1 deg. How? Because liquid in the bulb flashes to vapor in power bellows. Steam does 99 per cent of the work... instantly. Balancing bellows eliminates spring counterpoise and packing gland... prevents response to variations in steam temperatures... provides free-floating valve disc.

Compact, trouble-free, dirt-proof, hermetically sealed Stacon Regulators operate consistently in the worst possible surroundings—require no maintenance. To learn more about the most sensitive, accurate, economical temperature regulator available, write for Stacon Bulletin 50-1000.

Ⓢ 6690

*Patented

Farris Stacon Corp.

406 COMMERCIAL AVE. PALISADES PARK, N. J.

When inquiring check CP 2224 on handy form, pgs. 2-3

for GREATEST DEPENDABILITY and EFFICIENCY
in metered pressure pumping of
SULPHURIC ACID
... at all concentrations

Pumps against line pressure... meters accurately... has no stuffing box, so eliminates leakage, prevents corrosion of pump or contamination of product, avoids loss of prime... lowest maintenance... Hundreds of satisfactory installations.

• NO STUFFING BOX OR RUNNING SEAL
• POSITIVE DISPLACEMENT PISTON MEASUREMENT

• FLOW RATE ADJUSTABLE WHILE IN OPERATION

• MANUAL OR AUTOMATIC CONTROL

Lapp

PULSAFEEDER

PISTON DIAPHRAGM CHEMICAL PROPORTIONING PUMP

WRITE for Bulletin 262 with complete description and specifications.

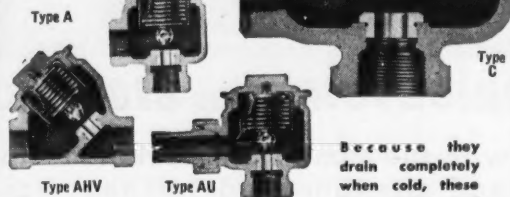
LAPP INSULATOR CO., INC., PROCESS EQUIPMENT DIVISION, 316 MAPLE STREET, LE ROY, N. Y.

When inquiring check CP 2225 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NICHOLSON MAKES FREEZE-PROOF

Steam Traps
for Every Plant
Use



Because they drain completely when cold, these four types of Nicholson steam traps are positively freeze-proof. Can be freely installed outdoors. Universally recommended for use in lines which need not be in continuous use during cold weather, because they are freeze-proof and because their 2 to 6 times average drainage capacity results in minimum heat-up time. The non-air-binding feature of Nicholson traps also notably facilitates steam transfer in severe weather. Size 1/4" to 2"; press. to 225 lbs.

BULLETIN 450

W. H. NICHOLSON & CO. 181 OREGON ST.
WILKES BARRE, PA.

Valves ★ Traps ★ Steam Specialties

NEW LITERATURE

sion and illustration of accepted rules of economical and dependable steel casting design. Other sections deal with characteristics of the material, explicit reasons why design engineers should concern themselves with steel casting design, and elimination of possible defects. An important part of the contents is concerned with improvements through conversion redesign.

More than 50 photographs, drawings, charts, and tables are included. To obtain "Fundamentals of Steel Casting Design" remit 20c direct to Steel Founders' Society of America, Dept. CP, 920 Midland Bldg., Cleveland 15, O. When inquiring specify CP 2228 on handy form, pages 2 and 3.

Organophosphorus compounds reviewed in detail

Complete review of preparation and properties of all known organophosphorus compounds is contained in 376-page book. Of special interest are translated Russian data and methods previously unavailable to English-speaking chemists.

Each chapter follows this general pattern: brief introduction; compilation of synthetic methods; list (as of January, 1950) of all authentic compounds of given type; summary of general physical and chemical properties; and references to other literature on individual compounds and synthetic methods.

To obtain "Organophosphorus Compounds", remit \$7.50 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 2229 on handy form, pages 2 and 3.

Busbar serves as one big outlet

Prefabricated trolley busway electrical distribution system is described and illustrated in 64-page catalog. System provides mobile outlets for power or light that can be set anywhere along entire track length.

Catalog is divided into convenient sections to facilitate selection of equipment. Special sections cover planning, layouts, and installation; full specifications are given, and system is thoroughly pictured. Catalog 25 is issued by Feedrail Corporation, Dept. CP, 125 Barclay St., New York 7, N. Y. When inquiring specify CP 2230 on handy form, pages 2 and 3.

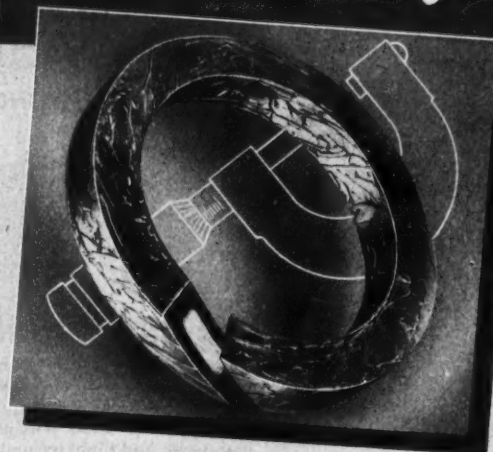
Refractories improved by aluminum phosphates

Aluminum phosphates described in 4-page bulletin range in physical form from dry solids to water solutions of high concentrations. Ratio of aluminum to phosphoric acid ranges from 1:1 to 1.67:1.

Phosphates are available in commercial quantities; they are said to afford good green strength, making it possible to fire molded shapes in place to yield high temperature non-slugging refractories. Salient properties include fairly high melting point and good bonding properties at wide range of temperatures. Suggested uses of refractory mixes incorporating aluminum phosphates include mortars, paints, ramming mixes, pressing mixes, and coating materials.

Technical Bulletin P-33 is issued by Monsanto Chemical Company, Phosphate Division, Dept. CP, St. Louis 4, Mo. When inquiring specify CP 2231 on handy form, pages 2 and 3.

DURAMETALLIC Packings



PRECISION made die-molded packing rings by Durametallic present 3 points of sealing satisfaction:

1. They provide a perfect fit for your stuffing box.
2. They save time, labor and eliminate waste.
3. They are tailor-made to insure a more accurate packing installation.



**Write today for Your
Copy of File No. DMCP**

Containing illustrated bulletins on Durametallic Packings—with specifications and data toward answering your sealing problems.

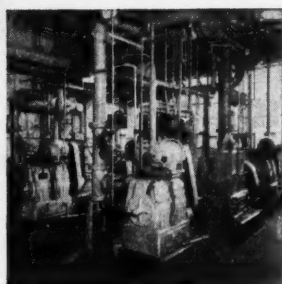
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HIGH vacuum processing equipment operates at greatest efficiency when Stokes MICROVAC Pumps are used to provide the low pressures required.

Stokes MICROVAC Pumps combine simplicity of design, highest continuous trouble-free service, and lowest operating costs.

Today... Write for the NEW Catalog No. 700. It describes Stokes MICROVAC Pumps... gives schematic drawings of typical processing applications.

F. J. STOKES MACHINE CO.
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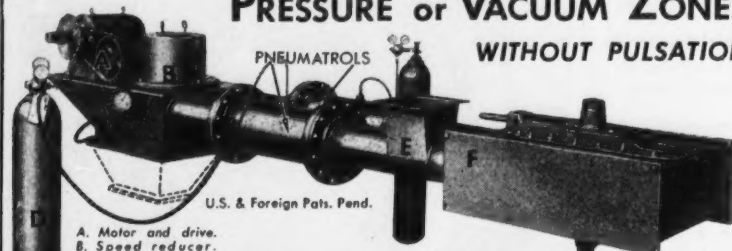


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HAPMAN PNEUMATROLS

Now CONVEY CONTINUOUSLY
INTO OR OUT OF

PRESSURE or VACUUM ZONES
WITHOUT PULSATION



U.S. & Foreign Pats. Pend.

HANDLE ANY FLOWABLE MATERIAL

This photo shows the testing set-up prior to shipping an installation of a Hapman circular flight chain conveyor equipped with Hapman Pneumatrols. The pressure-sealed Pneumatrols used with the Hapman pressure-tight, chain-link and flight assemblies, make it possible to convey any flowable material into or out of vacuum and pressure zones intermittently, continuously or it can be processed in motion through these zones. Complete information on request.

HAPMAN CONVEYORS, Inc. 630-b GIBSON ST.
Division HAPMAN-DUTTON COMPANY • KALAMAZOO 6, MICH.

When inquiring check CP 2233 on handy form, pgs. 2-3

Shriver Filter Presses

Save TIME • SPACE • LABOR • INVESTMENT

RECOVER SOLIDS
CLARIFY LIQUIDS
WASH AND EXTRACT
DRY FILTER CAKE
REDISSOLVE CAKE
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At Any Pressure and Temperature
With Minimum Operating Cost

This filtration book tells why Shriver Filter Presses are so versatile; how they can fit into your processes; how to determine their cost and to select the right unit for the specific job. It's packed with practical information. Write for a copy—free.

T. SHRIVER & COMPANY, Inc., 846 Hamilton St., Harrison, N. J.

When inquiring check CP 2234 on handy form, pgs. 2-3

NEW LITERATURE

Presents rare earth oxides and salts

Including compounds of yttrium, lanthanum, praseodymium, neodymium, samarium, europium, and gadolinium, "Rare Earth Oxides and Salts" is a price list issued by Research Chemicals Inc., Dept. CP, P. O. Box 431, 831 N. Lake St., Burbank, Calif. When inquiring specify CP 2235 on handy form, pages 2 and 3.

How to depth harden any kind of steel

Simple procedure for gradient depth hardening of machine parts, cutting and impact tools, wire, hand tools, engraved stamping dies, etc., is described and illustrated in bulletin.

Bulletin shows how any kind of steel can be gradient depth hardened with a positive change in grain structure from surface to core, providing extreme hardness, tensile strength, and ductility.

Bulletin 13 is issued by Wilson Carbon Company, Inc., Dept. CP, 60 E. 42nd St., New York 17, N. Y. When inquiring specify CP 2236 on handy form, pages 2 and 3.

NBS issues bibliography of electron microscopy

Compilation of technical literature on electron microscopy comprises 87 pages. Arrangement is chronological by general categories, alphabetical by author within each year.

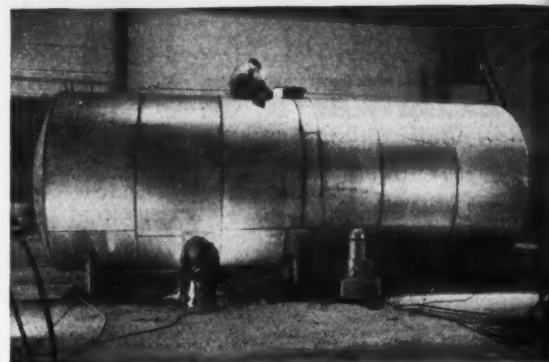
To obtain NBS Circular 502, remit 25c direct to Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Presents gauges, valves for liquid service

Four-page bulletin presents selected items from complete line of liquid level gauges, valves, water columns, trycocks, and gauge illuminators. Items are described and illustrated. Unit 152 is issued by Jerguson Gage & Valve Co., Dept. CP, 80 Fellsway, Somerville 45, Mass. When inquiring specify CP 2237 on handy form, pages 2 and 3.

Gives technical info on porous media

Complete, 56-page bulletin covers all filtration and diffusion applications for ceramically bonded porous media. Numerous charts, tables, and illustrations supplement technical informa-



BRIGHTON HANDLES BIG JOBS

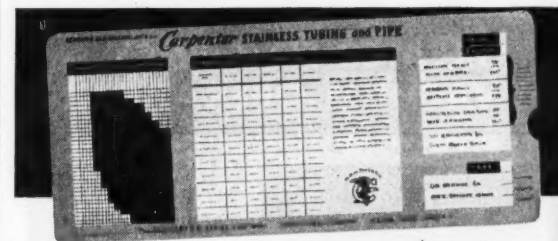
with the same skill, workmanship and attention to detail that has made this company world famous.

This solid stainless steel formaldehyde storage tank is an example of a big job (9 1/2' diameter by 24' length) that was built to customers specifications. It was shipped complete—ready to install.

See Brighton for Portable Kettles or Trucks. Write today for new catalog No. 12.

BRIGHTON COPPER WORKS, INC.
BRIGHTON STATION - CINCINNATI 14, OHIO Est. 1914

When inquiring check CP 2238 on handy form, pgs. 2-3

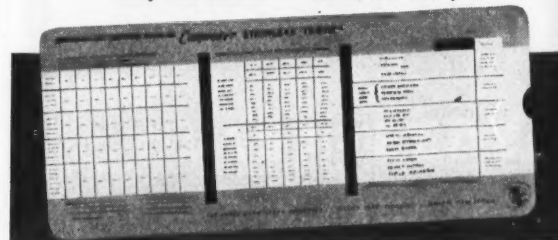


NEW SLIDE CHART on Carpenter Stainless Tubing & Pipe gives you

- Recommended Bending Radii and Coil Diameters for tubing and pipe from 3/8" to 5".
- Physical Constants, standard sizes and pressure data.

A note on your company letterhead will start this useful Carpenter Stainless Tubing Slide Chart on its way to you.

THE CARPENTER STEEL COMPANY
Alloy Tube Division Union, New Jersey



When inquiring check CP 2239 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Unusual Drying Problems Solved with...

**Allis-Chalmers
Dielectric
Heaters**

FAST, UNIFORM DRYING of many products is possible with Allis-Chalmers dielectric heaters. In many processes you end overbaking, burning of thin sections, and case hardening of outer layers. Often dielectric heating is the *only* solution to a drying problem requiring speed, or uniformity.

Continuous conveyors can carry the material between the electrodes for drying. Space requirements are small. Drying takes only a few minutes.

Get engineering and cost studies from your nearby Allis-Chalmers Sales Office, or write direct.

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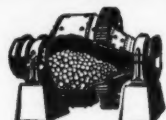


ALLIS-CHALMERS

When inquiring check CP 2240 on handy form, pgs. 2-3

Try
**HARDINGE
EQUIPMENT**
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GRINDING
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CLASSIFYING
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When inquiring check CP 2241 on handy form, pgs. 2-3

NEW LITERATURE

tion on uses, design, operation installation, and similar considerations.

"Porous Media" is issued by The Carborundum Company, Refractories Division, Dept. CP, Perth Amboy, N. J. When inquiring specify CP 2242 on handy form, pages 2 and 3.

Capacities to 3500 lb credited to hoists

Series of hoists described in 16-page bulletin have capacities from 500 to 3500 lb. Hoists are single-drum type, have applications in mines, construction work, oil fields, and processing plants.

Bulletin 76-X is issued by Joy Manufacturing Co., Dept. CP, Oliver Bldg., Pittsburgh 22, Pa. When inquiring specify CP 2243 on handy form, pages 2 and 3.

Check-out system aids control of tools

How to reduce theft, hoarding, and loss of tools is explained in 6-page bulletin. Check-out system not only shows location of tools but provides information on number of uses, etc.

Bulletin A-150 REV is issued by Industrial Division, McCaskey Register Company, Dept. CP, 101 W. 31st St., New York 1, N. Y. When inquiring specify CP 2244 on handy form, pages 2 and 3.

Shows floors which resist acids and alkalis

Acid- and alkali-resistant floors are shown in 4-page bulletin. Floors are for chemical plants, labs, refineries, steel mills, and similar applications.

Construction is of brick with poured or mortared joints; concrete base is needed. Further details are contained in "Nukem Floors", issued by Nukem Products Corporation, Dept. CP, 111-119 Colgate Ave., Buffalo 20, N. Y. When inquiring specify CP 2245 on handy form, pages 2 and 3.

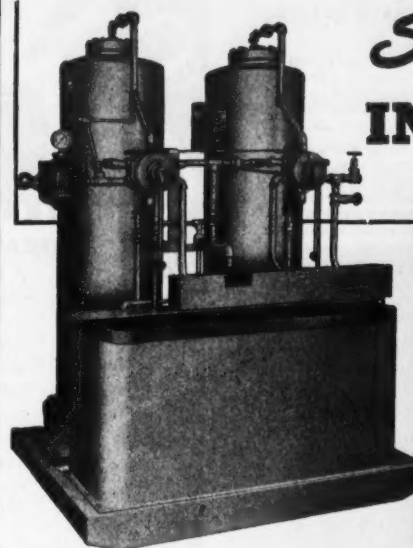
Moisture and fungus resisted by finishes

Purpose of 21-page booklet is to provide technical data on moisture and fungus resistant coatings for electrical equipment. Booklet consists largely of brief descriptions and specification tables.

"Tuf-On" is issued by Brooklyn Varnish Mfg. Company, Inc., Industrial Research Division, Dept. CP, 50 Jay St., Brooklyn 1, N. Y. When inquiring specify CP 2246 on handy form, pages 2 and 3.

ion exchanger

Suggestions by
INDUSTRIAL



A Two-Bed INDUSTRIAL Ion-Exchange Unit. Standard two- and four-bed units available with capacities of 200 to 1000 gph. Special units of any capacity engineered to requirements.

Demineralization of Water

Deacidification of Solutions

Purification of Organic Solutions

Recovery of Valuable Metals from Solutions

Concentration of Solutions

Substitutions of Anions and Cations in Solutions

The success stories of ion exchangers are not isolated cases. All through industry in a wide variety of applications they are effecting substantial cuts in costs, more uniform products, and a new ease in process control.

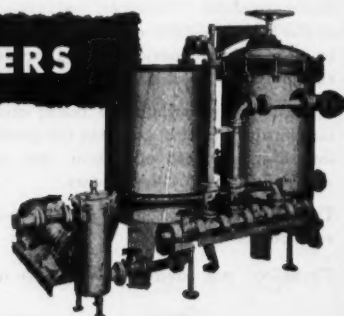
Here are a few suggestions for you to check against your own processing. INDUSTRIAL is glad to give you the benefit of its experience if you will outline your requirements. An estimate of probable savings, production, approximate costs, and the equipment required will enable you to know what the ion-exchange method can do for you.

INDUSTRIAL FILTERS

**For Solution Clarification
Any Solution — Any Quantity**

A Typical INDUSTRIAL Stationary Filter. Standard portable and stationary models available with capacities of 100 to 15,000 gph. Special filtering systems are engineered to meet unusual requirements.

Write for full information and recommendations.



INDUSTRIAL FILTER & PUMP MFG. CO

5908 Ogden Ave.
Chicago 12, Ill.

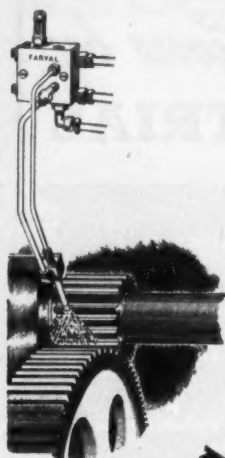
FILTERS PUMPS CORROSION TESTING APPARATUS
Pressure Type Centrifugal Salt Fog • Humidity

RUBBER DIVISION WATER
Vulcanized Linings • Molded Products DEMINERALIZERS

When inquiring check CP 2247 on handy form, pgs. 2-3

New Farval Spray Valve

METERS LUBRICANTS TO SLIDE SURFACES AND OPEN GEARING



Write for this
FREE bulletin

BY an ingenious adaptation of the familiar Farval Dualine Valve, either grease or oil is sprayed through a nozzle—onto any desired area, in any amount, at any interval.

The new Farval Spray Valve can be added to a regular Farval Dualine Lubrication System wherever compressed air is available—or a complete system of spray valves may be installed, served by either manual or automatic pumping unit.

Farval Spray Valves have been thoroughly tested in service on a wide variety of machines and equipment, supplying lubricant efficiently, economically and safely to open gearing, slide surfaces and other areas where Farval closed systems are not readily adaptable.

For full description with diagrams, get Farval Bulletin No. 60. The Farval Corporation, 3257 East 80th Street, Cleveland 4, Ohio.



When inquiring check CP 2248 on handy form, pgs. 2-3

STRAINERS AND FILTERS

AVAILABLE IN ALL TYPES AND SIZES

A longer lasting, accurately made filter or strainer increases your profits at every application. The skilled craftsmanship and selected quality materials used in the manufacture of Cleveland Wire Screen is your yardstick for discriminating buying. Custom designed strainer elements are produced in small or large production runs from Chrome Nickel or Copper Alloys. Write for Strainer and Filter Bulletin No. 7.

A CLEVELAND WIRE SCREEN FOR EVERY PURPOSE

THE CLEVELAND WIRE CLOTH & MFG. CO.

3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 2249 on handy form, pgs. 2-3

STEP UP PRODUCTION

LOWER OPERATING COSTS

PROCESS A BETTER AND MORE UNIFORM PRODUCT

with BUFLOVAK-DOPP Jacketed Kettles and Mixers

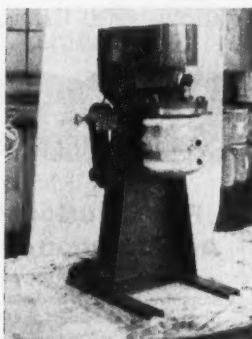
Quicker heating or cooling, and uniform, thorough mixing, cut costs, speed production, and help make a better product. Features, exclusively a combination of BUFLOVAK-DOPP experience, give you these results in processing chemicals, food products and pharmaceuticals.

Processing operations are faster and easier! Positive temperature control protects the product! Dependable, long-life, low-cost operation, are additional benefits enjoyed by BUFLOVAK users.

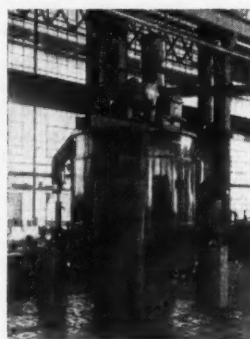
There's a type and size that will meet your individual requirements.

Facilities are available for pre-testing operations.

Write for information.



5-Gal. Laboratory Electrically Heated Kettle.



3000-Gal. Steam Jacketed Grease Mixing Kettle.

BUFLOVAK EQUIPMENT DIVISION

of Blaw-Knox Company

1645 Fillmore Ave. Buffalo 11, N.Y.

When inquiring check CP 2250 on handy form, pgs. 2-3

NEW LITERATURE

Stresses basic behavior of organic compounds

Arranged according to type reactions, 669-page book seeks to bring together basic facts and theories of advanced organic chemistry. To accomplish this, emphasis is placed on fundamental behavior patterns of organic compounds, correlating reactions with one another. Material is slanted at those who already have familiarity with the subject but who wish to obtain mastery of fundamentals.

To obtain "Advanced Organic Chemistry", remit \$8 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 2251 on handy form, pages 2 and 3.

Ceiling-mounted heaters

Four-page, 2-color bulletin displays line of unit heaters fired by oil. Heaters are mounted on rods hanging from ceiling, save valuable floor space. Capacities range from 112,000 to 450,000 Btu in individual models. Burners have average maximum lift of 17½' with ½" line so that fuel tank can be installed at some distance from suspension unit. Standard equipment includes blower and all necessary controls.

Containing photographs, cutaway drawings, and tables of dimensions and capacities, "Suspension Type Winter Air Conditioner" bulletin is issued by Jackson & Church Co., Dept. CP, Saginaw, Mich. When inquiring specify CP 2252 on handy form, pages 2 and 3.

Gives specs on lubrication practices and compounds

Covering full line of greases for anti-friction bearings, handy folder gives use and application data for 25 different densities ranging from liquid greases to heavy cup lubricants. Also given are facts on lubrication maintenance and selection of a lubricant. Folder is issued by Master Lubricants Co., Dept. CP, 962 Fourth St., Los Angeles, Calif. When inquiring specify CP 2253 on handy form, pages 2 and 3.

Every alkyl patent on file is contained in list

With an eye to acquainting manufacturers and users of alkyl resins with all available patent information, 15-page publication shows main claims of every alkyl patent listed by U.S. Patent Office. Total of 137 are presented, 41 of which have expired as of September 30, 1950. Featured are compositions with polyhydric alcohol-polycarboxylic acid reaction products, with monocarboxylic acid or anhydride, and with monohydric alcohol.

To obtain patent list SR-1, remit \$4 direct to Patent Publications, Dept. CP, Box 4094, Washington 15, D. C. When inquiring specify CP 2254 on handy form, pages 2 and 3.

Correct ball segregation featured in mill

Twelve-page bulletin describes and illustrates ball mill for wet or dry grinding. Contents include operating principles, design features, performance data, typical flow sheets, construction details, foundation drawings, and dimensions. Mill is a modification of traditional

NEW LITERATURE

conical mill, featuring convex heads and tapered barrel which cause correct ball segregation and increased grinding efficiency.

Bulletin AH-414 is issued by Hardinge Company, Inc., Dept. CP, 240 Arch St., York, Pa. When inquiring specify CP 2255 on handy form, pages 2 and 3.

Acids, alkalis don't affect resinous cement

Resinous cement described in 4-page, 2-color bulletin has a furfural alcohol resin base and is immune to most acids, alkalis, and solvents. It is non-toxic and may be stored "indefinitely" without deterioration. It withstands temps to 350°F. Sets by chemical reaction. Initial set takes place quickly enough to return work to service without undue delay.

Cement's major applications are on process tanks, sewers and pits, and industrial floors; joins acid brick with a tensile strength to 2400 psi. "F-66" is issued by Nukem Products Corporation, Dept. CP, Buffalo 20, N. Y. When inquiring specify CP 2256 on handy form, pages 2 and 3.

Discusses optical bleaches in soaps and detergents

Theory and practice of optical bleaches in soaps and detergents are presented in 15-page technical bulletin. Physical and chemical properties of "white dyes" are discussed, along with applications, evaluation testing procedures, and much general information. Technical Bulletin 811 is issued by American Cyanamid Company, Calco Chemical Division, Dept. CP, Bound Brook, N. J. When inquiring specify CP 2257 on handy form, pages 2 and 3.

Mercury-cathode applications extended by apparatus

Comprehensive 24-page working manual explains apparatus employing the mercury-cathode principle. Apparatus is mainly used for separation of certain elements which cannot otherwise be practically or conveniently separated. Performance is so improved that "it permits for the first time the economical use of many time-honored analytical procedures and opens the field for new mercury-cathode applications".

Historical data, performance, construction, operation, and applications are discussed. Appendix contains information on working methods, a bibliography, and several diagrams. "Dyna-Cath" working manual is issued by Eberbach & Son Company, Dept. CP, Ann Arbor, Mich. When inquiring specify CP 2258 on handy form, pages 2 and 3.

Brochure outlines scope of research service

Concise 4-page brochure that details specific fields of research service consists of over 100 detailed tabulations of interests and activities. All are listed under 11 major headings: research problems, development problems, literature research, chemical engineering, production engineering, product packaging, analysis and testing, patent matters, technical sales, management engineering, and service and tools.

Brochure is issued by Evans Research & Development Corporation, Dept. CP, 250 E. 43rd St., New York 17, N. Y. When inquiring specify CP 2259 on handy form, pages 2 and 3.



Alcoa Heat Exchanger News



PUBLISHED BY ALUMINUM COMPANY OF AMERICA

ALCLAD TUBES... a bargain in corrosion resistance

If you are troubled by the corrosion effects of sulfur compounds, oxygen, or carbon dioxide in cooling waters, alclad tubes offer a long-lasting solution.

Alclad tubes have given long service life in many fresh, brackish, and salt waters where high industrial contamination exists. Alclad tubes withstand waters having a wide pH range.

Coating Resists Corrosion

The zinc-aluminum alloy layer galvanically resists corrosion of the base aluminum alloy structure of the tube—acts like a "built-in" anode. Corrosion is confined within the integral cladding layer. Even when large areas of the alclad coating have been destroyed by electrolysis, the rest of the coating still continues to protect the exposed alloy core. Alclad tubes have withstood such corrosive attack for more than ten years, without failure.

Alclad Costs Little

The remarkable thing about alclad tubes are their low price. Foot for foot, metal for metal, they cost less than any other tubes except bare aluminum. Twenty per cent less than ordinary steel. Forty-seven per cent less than Admiralty. A sixth as much as stainless steel.

We'd like to tell you more about the savings possible with alclad tubes—amounting to thousands of dollars every month in many plants. Write to us. ALUMINUM COMPANY OF AMERICA, 1491M Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA OFFERS NEW BOOK



This new, 24-page book will answer many of your questions about Alcoa tubes. It covers fabrication techniques, alloy selection, chemical and petroleum applications. It describes tube cleaning, inhibitors, cathodic protection. It contains complete information on fluid flow and heat transfer. There are formulas, tables, and specification data. Write for your free copy today. ALUMINUM COMPANY OF AMERICA, 1491M Gulf Building, Pittsburgh 19, Pa.

THESE APPLICATIONS ARE NATURALS FOR ALCLAD TUBES:

Petroleum

Condensing of hydrocarbon fractions such as naphtha, gasoline, and gas oil
Vapor-recovery condensers
Lube-oil coolers
Natural-gas compressor after-coolers
TCC overhead condensers
Recompressor aftercoolers
Hydrogen-sulfide gas coolers
MEA-solution coolers and exchangers

Furfural condensers and exchangers

MEK service
Propane chilling
Wax sweaters
Depropanizer overhead condensers

Chemical

Butanol
Ethanol
Ethylene Glycol
Glycerin
Hydroabietyl

Isopropanol

Methanol
Phenol
Propylene Glycol
Acetaldehyde
Formaldehyde
Acetic Acid
Butyric Acid
Stearic, Palmitic, Oleic Acids
Reinoleic Acid
Acetanilide
Ammonia and Ammonium Hydroxide

Hydrogen Cyanide

Nitric Acid (concentrated)
Pyridine
Hydrogen Sulfide
Benzene
Benzol
Dichlorobenzene
Gasoline
Gelatin
Hydrogen Peroxide
Methyl Ethyl Ketone
Turpentine

These listings cannot cover the many hundreds of other chemicals with which aluminum tubes can be used

When inquiring check CP 2260 on handy form, pgs. 2-3

Cast to Last LONGER LIFE in processing equipment

Another Example of
B&W Engineering
for Economy

As vital parts of crushers, grinding mills, pumps, furnaces, tube mills, and many other kinds of process equipment, B&W Alloy Iron and Steel Castings are demonstrating outstanding ability to resist abrasion, corrosion, and oxidation, and to retain high strength even at elevated temperatures. Operating in just about every kind of tough service, they are helping to keep production up by reducing costly, time-consuming repairs and replacements. Their long-life characteristics have been proved over and over in service temperatures up to 2000 F. and under conditions requiring high creep strength and wear-resistance.

Might pay you, as it has so many others, to call on our broad experience in solving processing problems with heat-resistant and wear-resistant alloy castings from our own modern foundries. The Babcock & Wilcox Co., 85 Liberty St., New York 6, N. Y.



**BABCOCK
& WILCOX**

When inquiring check CP 2261 on handy form, pgs. 2-3

NEW LITERATURE

Lists company's products and literature

"Index of SK Equipment and Descriptive Bulletins" is a comprehensive, 4-page summary of products and descriptive literature. Products consist mainly of processing equipment, ranging from valves, exhausters, and coolers to blowers and pumps. Listings are both alphabetically and by application. Index is issued by Schutte and Koerting Company, Dept. CP, 12th & Thompson Sts., Philadelphia 22, Pa. When inquiring specify CP 2262 on handy form, pages 2 and 3.

Specifies temperature and pressure instruments

Illustrated 56-page catalog gives specifications and drawings of temperature and pressure instruments. Presented are industrial thermometers and accessories; engraved stem thermometers; recording thermometers; dial-indicating thermometers; miscellaneous thermometers; hydrometers; recording pressure gauges; panel boards; air-operated temperature and pressure controllers; diaphragm motor valves; self-operating temperature regulators; pressure gauges; reducing valves; air filters and air guns; thermostatic radiator traps; and bucket traps.

Catalog 101-J is issued by H. O. Trerice Company, Dept. CP, 1420 W. Lafayette Blvd., Detroit 16, Mich. When inquiring specify CP 2263 on handy form, pages 2 and 3.

Maker reports his bearings need less relubrication

Prelubricated motor bearings are topic of 4-page bulletin. Bearings have provision for relubrication, and manufacturer reports that they offer more hours of operating life without relubrication than any other bearing of this type. Bearings are double-shielded, automatically draw grease from reservoir when necessary.

Contents of bulletin include sketches and cutaway drawings of bearings and their bracket mounting. Bulletin B-2201 is issued by Reliance Electric & Engineering Company, Dept. CP, 1088 Ivanhoe Road, Cleveland 10, O. When inquiring specify CP 2264 on handy form, pages 2 and 3.

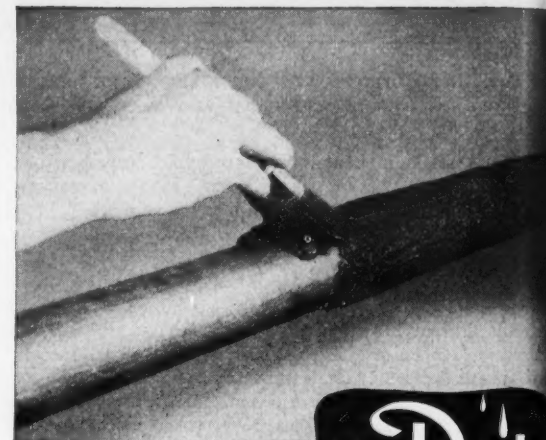
Cuts moisture content in concentrates

Four-page bulletin describes series of concentrate dryers, units for reducing moisture in flotation concentrates and other chemical or industrial products. Four types are shown: direct heat, indirect heat, steam, and rotary. Operating principles of each are described, and drawings show construction features. Photographs of actual installations are also included.

Bulletin D4-B1 is issued by Denver Equipment Co., Dept. CP, 1400 Seventeenth St., Denver 17, Colo. When inquiring specify CP 2265 on handy form, pages 2 and 3.

1949 research program profiled by NBS

Summary of the scientific investigations it conducted during 1949 is contained in 101-page illustrated booklet sponsored by National Bureau of Standards. Scientific activities during the year were conducted by divisions concerned with electronics, applied mathematics, atomic and radiation



COVER PIPES TANKS, WALLS

NoDrip

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating, STOPS CONDENSATION DRIP!



NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal drums, ready for use.

TRY NoDRIP

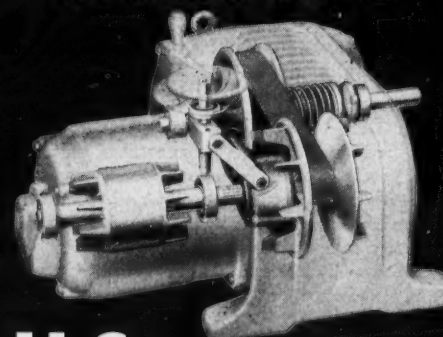
Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

J. W. MORTTELL CO., 530 Burch St., Kankakee, Ill.

When inquiring check CP 2266 on handy form, pgs. 2-3

GET 10 HOURS WORK IN 8



U.S. VARIDRIVE MOTOR — 1 to 10,000 R. P. M.

PRECISELY THE RIGHT SPEED FOR EACH
AND EVERY OPERATION INSTANTLY

Ask for Descriptive Bulletin

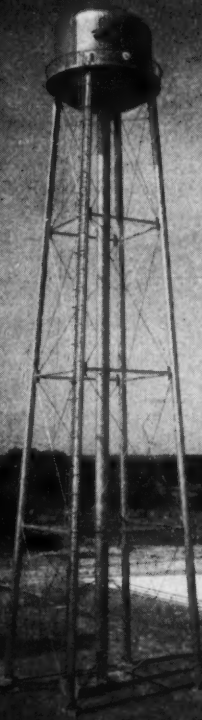
U.S. ELECTRICAL MOTORS, Inc.

Los Angeles 54, Calif.

Millard, Conn.

When inquiring check CP 2267 on handy form, pgs. 2-3

HORTON Elevated Tanks



Horton elevated tanks are often used to provide gravity water pressure for general service or fire protection at industrial plants. They are dependable because the water is stored above your plant, ready to flow the instant you need it.

Horton ellipsoidal-bottom tanks like the one shown above are graceful, easily-maintained structures. Write our nearest office for information on standard capacities available and other details.

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2107 Healey Bldg.
Birmingham 1	1533 North Fifth St.
Boston 10	1007-201 Devonshire St.
Chicago 4	2116 McCormick Bldg.
Cleveland 15	2212 Guildhall Bldg.
Detroit 26	1535 Lafayette Bldg.
Houston 2	2151 National Standard Bldg.
Los Angeles 17	1536 General Petroleum Bldg.
New York 6	3314-165 Broadway Bldg.
Philadelphia 3	1650-1700 Walnut St. Bldg.
Salt Lake City 4	507 West 17th South St.
San Francisco 4	1545-200 Bush St.
Seattle 1	1307 Henry Bldg.
Wasa 3	1649 Hunt Bldg.

When inquiring check CP 2268 on handy form, pgs. 2-3

NEW LITERATURE

physics, radio propagation, electricity and optics, metrology, heat and power, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, and building technology.

Of the numerous and varied projects carried on by these divisions, those of greatest general interest and widest applications have been selected for description.

Included are the development of an atomic clock controlled by the constant frequency of vibration of the atoms in the ammonia molecule, the production of a synthetic mica having essentially the same valuable properties as the corresponding natural mica, the development of a process for increasing wear of sole leather by impregnating it with rubber, and the determination of the magnetic moment of the proton. Space is also given to work in such fields as electronic computers, corrosion, low-temperature physics, and high polymers.

To obtain NBS Miscellaneous Publication 198, "Annual Report of the National Bureau of Standards for 1949", remit 75c direct to Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Protects iron and steel from heat oxidation

Several applications of metallizing process for protecting iron and steel against heat oxidation are shown in 4-page bulletin. Process consists of coating the metal to be protected with chromium-nickel alloy and/or aluminum, and special sealers. There are 3 processes, each for a particular range of temperatures and service conditions. Details are given in Bulletin 45A, issued by Metallizing Engineering Company, Inc., Dept. CP, 38-14 30th St., Long Island City 1, N. Y. When inquiring specify CP 2269 on handy form, pages 2 and 3.

Twin catalogs present mixers, both fixed and portable

Twelve-page, 2-color Catalog 500 presents engineering suggestions and full operation and performance data on line of portable mixers. Models are available with such features as variable speed, and air motors. Accent in catalog is on heavy-duty industrial types.

Sixteen-page, 2-color Catalog 600 gives complete engineering data on line of fixed-mounting mixers in both top- and side-entering types. Wide choice of speeds, powers, and other characteristics is available.

Both catalogs are fully illustrated; issued by Eastern Industries, Inc., Dept. CP, 296 Elm St., New Haven, Conn. When inquiring specify CP 2270 on handy form, pages 2 and 3.

Leftover sludge helps to clear water

Photographs of typical installations are highlighted in bulletin describing water conditioning apparatus that takes advantage of the fact that previously formed precipitates added as sludge or slurry will accelerate reactions. Bulletin details principle as applied to clarifier, illustrates and describes types available, lists applications, and covers auxiliary equipment.

Bulletin 5001 is issued by Cochrane Corporation, Dept. CP, 17th St. and Allegheny Ave., Philadelphia 32, Pa. When inquiring specify CP 2271 on handy form, pages 2 and 3.

JOHN CRANE

molded Teflon V Rings seal all CHEMICAL and HYDRAULIC SERVICES

PAT. PENDING

CHEMLON* V-TYPE PACKINGS ARE FRICTIONLESS, CHEMICALLY-INERT

These "V" rings are the newest in the complete line of CHEMLON products. They are perfectly molded, have extremely low friction and will resist any corrosive chemical. The special cross section design insures permanent sealing even under varying pressures, at temperatures up to 450°F. Many stock sizes are readily available without mold charges.

Teflon "V" Rings permit you to make use of the latest hydraulic developments, formerly limited by the temperatures and services which could be handled by synthetic rubber "O" and "V" Rings.

If you have a difficult sealing problem requiring extremely low packing friction or high corrosion-resistance, why not let us help you solve it? A short description of your application will bring our prompt recommendation.

Our Chemical packing booklet contains valuable information. Send for it today.

Fisher Governor Co. of Marshalltown, Ia.—outstanding manufacturer of control valves for all types of services—has adopted Chemlon V Rings as standard available equipment on all Fisher diaphragm motor valves because of their low friction, toughness, resilience and chemical inertness. This Fisher 57T diaphragm motor valve is packed with CHEMLON "V" Rings.

*CHEMLON is Crane Packing Co.'s trade name for Teflon-fabricated products.

CRANE PACKING COMPANY

1821 CUYLER AVENUE • CHICAGO 13, ILLINOIS

Offices in all Principal Cities in United States and Canada

When inquiring check CP 2272 on handy form, pgs. 2-3

How Simple can you get ??? Why the Easy Way of Dust Collecting Costs Less

by Fred Deane

Rube Goldberg became famous inventing complicated gadgets for doing the simplest things. Trouble is, some folks seem to insist on outdoing Goldberg in making complex machines.

Take dust collecting, for example. I've been looking into these dust trapping machines. Some of them are wonders . . . of confusion.

Now, I'm grinding an axe for the American Dustube . . . It is so simple even I can understand it. And it doesn't take a genius to figure out that, generally, the most simple mechanical devices cost less to run, maintain and keep operating efficiently.

You can tell I'm not an expert but let me explain how the dustube works. Vent pipes carry dusty air to cloth filter bags inside a metal cabinet. The bags trap all the dust, leaving the air stream cleaner than the air you breathe.

To release accumulated dust a whiz of a device shakes the bag out just like a housewife empties a vacuum cleaner bag. The dust then falls into a hopper for recovery or disposal. Simple, isn't it?

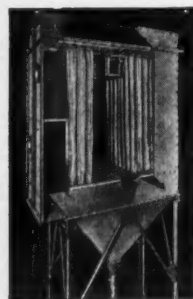
I won't go into the very exciting story about trapping micron sized particles or the business about power savings . . . but what I want to get over is this: If you need dust collecting equipment get in touch with American. Their engineers can tell you story after story about how Dustube paid off for its users. They can also tell you how it will pay off for you. Why not drop them a line for literature? It's all so doggone simple.

Sincerely,

Fred Deane

DUSTUBE ADVANTAGES

- BETTER DUST REMOVAL
- POWER SAVINGS
- HIGH EFFICIENCY
- EASE OF INSPECTION
- LESS FILTER WEAR
- FASTER FILTER REPLACEMENT



American
WHEELABRATOR & EQUIPMENT CORP.
478 S. Byrkit St., Mishawaka 12, Ind.

dustube
COLLECTORS

When inquiring check CP 2273 on handy form, pgs. 2-3

Page 80

White Water Clarified Continuously for Re-use; Fiber, Filler Recovery Virtually Complete

Flow rate changes, solids content variations have no effect on efficiency; units are solid, compact

USES: Clarifies white water for perpetual re-use of the water and close to 100% recovery of the fiber and the filler. Clarifies the combined waste water from the mill and clarifies de-inking plant waste solids in concentrated form for ready, economical disposal.

Features: Provides water that is virtually crystal clear, and fiber and filler recovery that is virtually complete, regardless of variations in operating conditions. Designed for thorough, efficient removal under all operating conditions, entirely automatically. Introduction of the right amount of simple, inexpensive paper making chemicals is automatic, with pH maintained at the correct level at all times.

Hydraulic flow in the "Clarifier", from zero to 150% of design capacity, is automatically controlled. Removal of concentrated fiber, filler or waste matter is also continuous and automatic. Thermal currents are automatically eliminated. "Clarifier" is simple and compact and requires a minimum of operating supervision and maintenance. Flow control is set for the job and locked in place.

Description: "Clarifier" operates on Fourdrinier machine white water, cylinder machine white water, mill waste water in general, board mill combined waste water or other plant liquids.

The "Clarifier" generates billions of infinitesimally tiny air bubbles, distributes them in the volume of white water or waste water being handled, and uses them to float particles suspended in the water. Flow is so directed and controlled that every last drop is subjected to these tiny bubbles and their natural physical attraction to solids, of whatever size and shape. Lifted to the surface by these bubbles, the solids particles are skimmed off and removed continuously under atmospheric pressure.

Diagram represents a layout of pilot plant proportions. It indicates how the "Clarifier" incorporates in one package unit (1) automatic chemical treatment, accomplished with automatic pH control equipment where the pH factor is present, or by automatic flow rate control, or both; (2) flocculation, aided by millions of tiny bubbles and by precisely controlled hydraulics; (3) separation of solids from water by flotation and continuous, automatic removal of the concentrated stock or sludge from the surface of the water.

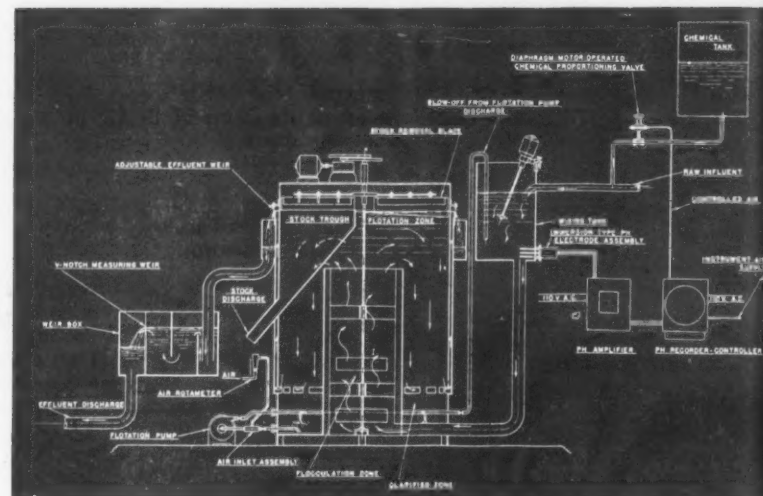


Diagram shows flow of waste water through flocculation zone, flotation zone and out to disposal point



Stock removal trough (inside flotation zone) with blades removed. Stock is swept up inclined plate into trough and thence to disposal pipe

CHEMICAL PROCESSING DEC

Referring to the diagram, water is first given chemical treatment, automatically controlled in mixing tank at night. Automatic control is so integrated that there is almost no time lag. This assures extreme flexibility and ability to absorb sudden loads without affecting flotation performance.

From the mixing tank, water enters bottom of inner or flocculation zone of "Clarifiner". Flow is upward, with low speed agitation, over the top of this inner section which remains well below the liquid surface itself. Flow is then downward, in annular space between inner zone and outer wall.

Air diffusion develops and occurs in this zone. In the flotation zone, air passes upward through the water, countercurrent to its downward flow. Clear water eventually flows into a shallow channel and thence to disposal point.

Stock removal trough (see photo) is located inside and near top of flotation zone. Rubber blades (they have been removed in photo view) rotate at very low speed, their bottom edges being an inch or more below surface. They sweep solids up an inclined plate, over into trough and thence to disposal pipe.

The "Clarifiner" operates on water containing as high as 25 lb of fiber and filler per 1,000 gal. Recovered stock continuously runs from 12 to 15% consistency with the fiber filler ratio unchanged from the original white water. Units are built in a variety of sizes to meet requirements.

Source: The Bird-Gibbs "Clarifiner" is built by Bird Machine Co., Dept. CP, South Walpole, Mass. . . . or for more information check CP 2274 on handy form, pages 2 and 3.

Power exhausters cover range of 1,700-27,000 cfm . . .

80 different fans offer selection to meet individual requirements

Uses: For applications where maximum amounts of dry, uncontaminated air are to be moved.

Features: Utilizes a minimum of power. Extremely low and compact, and occupying waste roof space and requiring no penthouse. No field assembly required.

Description: Unit is directly connected and completely self-contained. Type C exhausters supplement line of ventilating units and offer a selection of 80 axial flow exhausters covering a capacity range of 1,700 to 27,000 cfm. Design embodies modern, low silhouette. Maximum height for largest unit is only 36½".

Air expulsion is downward on to roof through weather-proof outlet. Where upward discharge is desired, unit is supplied without mushroom cover.

Fan itself embodies latest developments in air foil design, using 4 or 6 blades. Blades are high tensile strength aluminum alloy (machined) and perfectly balanced. Field replacements may be made without purchase of complete new wheel. Motors are enclosed standard types.

Protective finish is one-coat rust resistant primer and one coat acid resistant paint. Fan blades are protected by vinylite coating resistant to acid and alkali fumes and corrosive gases. However, these units in most cases are not recommended for service where problems of corrosive fumes or moisture-laden air are encountered.

Source: "Air-Max" type C power exhausters are built by The Gallaher Co., Dept. CP, 4108 Dodge St., Omaha 3, Nebr. . . . or for more information check CP 2275 on handy form, pages 2 and 3.

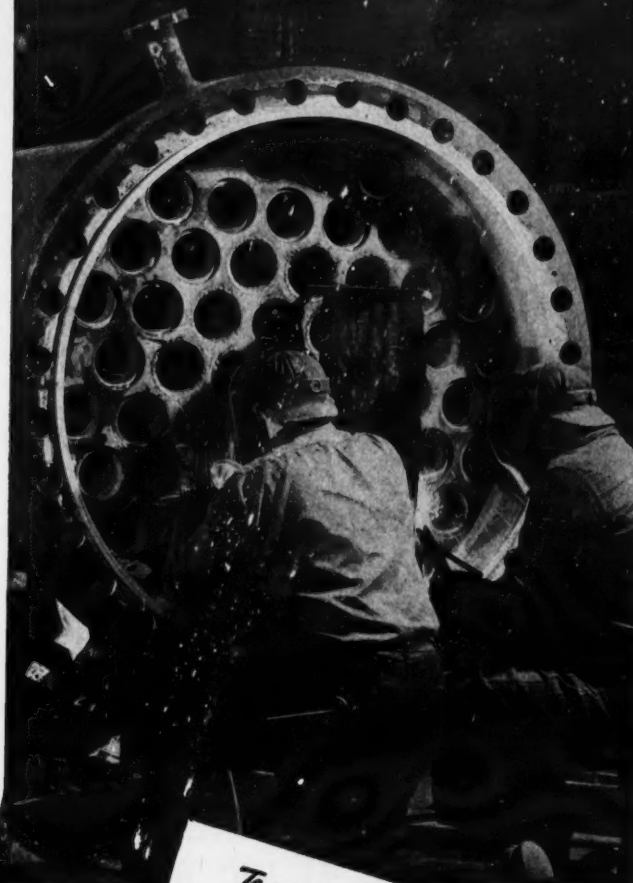
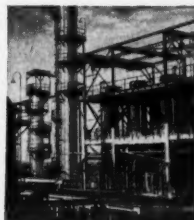
A strange breed of "cat" ... cat-equipment, that is!

ONE of the unusual types of equipment Kellogg is frequently called upon to fabricate is the cat-poly reactor. A strange breed of heat exchanger, it is in reality a combination pressure vessel and heat exchanger, inasmuch as operating pressures in the catalyst-packed tubes reach 1200 psi. Another unusual aspect of these exchanger-vessels is that they are designed to be taken out of service regularly for replacement of catalyst, rather than being built to operate without maintenance for as long a period as possible.

Fabrication of this type of equipment is unusual, too, in the heat exchange field. First, it's on the "grand" scale, tubes being 5 inches in diameter and 40 feet long, and the shells 50 inches in diameter. But probably the most important single fabrication step is the welding of the tubes to the tube sheets, replacing the customary roll-in operation. Here Kellogg's unusually broad experience in welding techniques asserts its importance...guarantees the customer finished cat-poly reactors in the minimum time with the maximum service life built in.

One recent order!

An even dozen Kellogg cat-poly reactors are installed in this brand new East Coast refinery. Another three-quarter dozen are now being finished in Kellogg shops, destined for a Midwest plant operated by the same refiner.



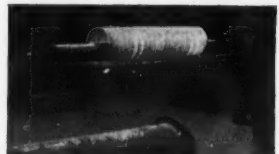
To master temperature, pressure
and chemicals use
M. W. KELLOGG
process equipment



Continuing Basic Study of the principles of heat exchange conducted by Kellogg development groups for more than twenty years has produced unduplicated design data.



Shop Layout Craftsmen are fully experienced on all types of heat exchanger fabrication from gigantic marine condensers to intricate jet motor combustion-chamber shells.



Extensive Shop Facilities, including every necessary fabricating step from plate rolling to stud threading, permit complete fabrication under same roof of any type of heat exchanger for any kind of service.



Special Shop Techniques permit the economical fabrication of the component parts for each heat exchanger as an individual production order and provide every exchanger with the advantages of "tailor-made" fit and serviceability.



Rigid Quality Control maintained by inspectors reporting directly to Shop Management rather than to Production executives, maintains quality of work at a much higher level than could be attained by customary control methods.

Heat Exchangers
Process Piping
Bends and Headers
Giant One-Piece Bends
Pressure Vessels
Vacuum Vessels
Fractionating Columns
Drums and Shells

The M. W. Kellogg Company (Subsidiary of Pullman, Incorporated) — Offices in New York, Jersey City, Buffalo, Los Angeles, Tulsa, Houston, Toronto, London and Paris

When inquiring check CP 2276 on handy form, pgs. 2-3

A Geared Pipe Threader

**THAT'S
EASY TO
WORK
WITH**

"These big solid handles make it a cinch to lift and carry the **RIGID 4P**"



RIGID No. 4P cuts perfect threads on 2 1/2" to 4" pipe

● No matter how good a threader is, it's a lot better if it's easy to handle. **RIGID 4P** has balanced loop handles so you can easily pick it up and put it on pipe—even when it's greasy and you're tired. Mistake proof workholder sets to size *before* you put it on pipe, one screw to tighten, no bushings. 4 sets of 5 high-speed steel chaser dies give clean accurate threads on 2 1/2," 3," 3 1/2" and 4" pipe. Ratchet handle furnished — **RIGID** Universal Drive Shaft and Power Drive available for power-threading. For perfect threads, easily, order the **RIGID 4P** from your Supply House.

RIGID
WORK-SAVER PIPE TOOLS

THE RIDGE TOOL CO. • ELYRIA, OHIO

When inquiring check CP 2277 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Replace mixed bed resins easily; keep demineralizer at peak capacity . . .

permanent cartridge unit delivers 10 gal per hour; simple low cost operation

Uses: For delivery of up to 10 gal per hour of high purity, demineralized water.

Features: Unit has a permanent cartridge and is equipped with a flow meter that enables operator to adjust flow intakes to proper rate for most efficient results. No heat, power needed to operate.

Description: Operates on ion exchange principle to transform tap water into demineralized water. Permanent cartridge is easily emptied of exhausted resins which are then replaced with a fresh charge. An electrical conductivity meter provides a continuous visual indication of the quality of the treated water being produced, warning when the resin charge should be renewed. Unit is ready for service upon attachment to faucet.

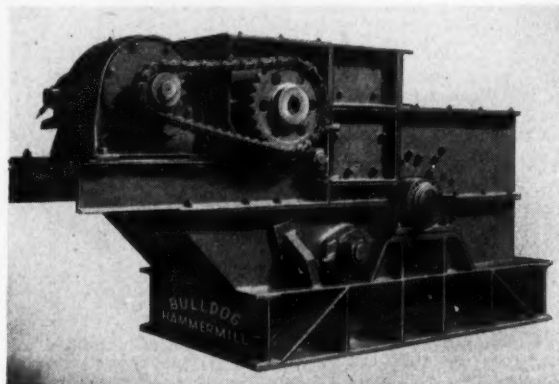
Source: Permanent cartridge demineralizer is made by the Penfield Manufacturing Company, Inc., Dept. CP, 19 High School Ave., Meriden, Conn. . . or for more information check CP 2278 on handy form, pages 2 and 3.

Line of hammer mills embodies construction improvements . . .

better access to controls aids in producing variable-sized finished products

Uses: For raw grinding and crushing of sticky materials, and materials with high moisture contents.

Features: Improvements in maker's line of "Bulldog" hammer mills include better access to controls for pro-



Hammers, liners, breaker plates, and grate plates of hammer mills are special-analysis steels for greater resistance to wear and abrasion

ducing variable-sized finished products, and heavier shafts with anti-friction bearings.

Capacity of ball and rod mills can be increased by as much as 30% with no increase in power by properly preparing their charge in these hammer mills, maker reports. In addition, plants wishing to increase their kiln capacity can increase raw grinding capacity with only minor changes in secondary hammer mills — thus eliminating major equipment expense.

Description: The 1951 line of "Bulldog" moving-breaker-plate, non-clog hammer mills are constructed of special-analysis steels for greater resistance to wear and abrasion. Hammers, liners, breaker plates, and grate bars

accuracy at High Operating Speed with Despatch LABORATORY OVENS



Despatch Laboratory and Production Ovens are ideally suited to all types of research . . . testing . . . production control. They are designed to provide the closest heat uniformity through every inch of the work chamber . . . consistently accurate temperature control at all heats . . . ample speed to process capacity loads at any desired operating temperature.

Chemical and analytical drying and baking, preheating and aging, sterilizing and curing, food dehydrating — these are just a few of the uses. Available in six models, with inside dimensions ranging from 13" x 13" to 37" x 25" x 50".

- Positive Air Intake
- Guaranteed Heat Elements 2700 to 12,000 watts
- High Volume Fan
- Air Velocity Control
- Accurate Indicating Control
- Modern Design — Rounded Corners

DESPATCH
Established 1911 in 1902

MANUFACTURERS OF OVENS
FOR ALL PURPOSES
ASK FOR BULLETIN No. 104

343 DESPATCH BLDG., MINNEAPOLIS 14, MINN.

When inquiring check CP 2279 on handy form, pgs. 2-3

LOW COST DRYING
with The "INSTANT DRYING" System
INSTANTLY!!

- Less power, smaller connected load required.
- Large capacity, rugged construction.
- Minimum labor — one man per shift to a battery of several units.

Many have proved savings with "INSTANT DRYING." Your drying problem in a letter will bring detailed information on "INSTANT DRYING" and specific answers to your questions.

INSTANT DRYING CORPORATION
101 Park Avenue, New York 17, N.Y.
Engineering by CLARK, MacMULLEN & RILEY, INC., N. Y.

Testing and Research Laboratories at Poughkeepsie, N. Y.

When inquiring check CP 2280 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

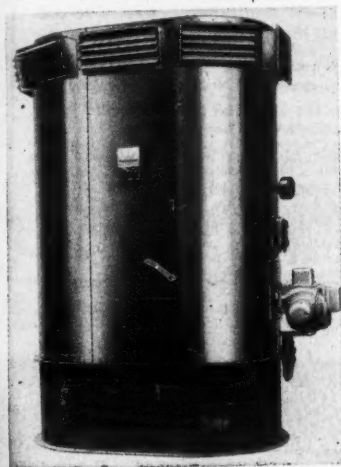
are reported to wear longer, and thus reduce maintenance.
Source: Product of Hammermills, Inc., division of Pettibone Mulliken Corp., Dept. CP, 4719 W. Division St., Chicago 51, Ill. . . . or for more information check CP 2281 on handy form, pages 2 and 3.

Assemble direct heat units to meet requirements of specific plant areas . . .

5 different packaged models used singly or grouped in various combinations; gas or oil firing

Uses: These independent heating units may be used in various combinations to suit individual capacity requirements, circulating warm air by fans. Small plants, production departments, warehouses, shipping rooms and offices are typical application areas.

Features: Eliminate costly duct work, piping, radiation, diffusers, and similar components. By use of large Thermobloc units and the smaller Thermopak units in various combinations, adequate heat is provided at maximum economy in installation, operating cost, and maintenance.



Direct heat transfer unit

wood floors. No foundations required. Heat may be started and stopped instantly, no standby fire being necessary. As operation is automatic, personal supervision by a worker is not needed.

Description: Thermoblocs are independent heating units based on principles of direct heat transfer and direct air circulation to exhaust warmth from fuel at overall efficiencies of 82-86%. Thermopaks are smaller capacity units operating on practically the same principle and basically the same in design.

Units are easily installed by placing at desired location, running up a fuel line and power circuit and flue gas outlet (no chimney draft is required). It is a simple matter to adjust discharge nozzles to building conditions. Multiple installations may be figured by means of capacity tables that are available. Five #550 Thermoblocs will heat a plant that would require an 80 hp boiler.

Thermobloc Model #1000 has capacity of 1,000,000 Btu or 29.6 hp; #550: 550,000 Btu or 16.4 hp; #300: 300,000 Btu or 8.96 hp. Thermopaks #200 and #100 have respective capacities of 200,000 Btu, 5.07 hp and 100,000 Btu, 2.09 hp. Thermoblocs take in cool air at floor level and discharge it horizontally overhead. Thermopak units may be set on floor, wall hung, or horizontally suspended. During warm weather Thermobloc fans may be operated for air circulation.

Source: Thermobloc Div. of Prat-Daniel Corp., Dept. CP, East Port Chester, Conn. . . . or for more information check CP 2282 on handy form, pages 2 and 3.

costly maintenance problem completely solved

with Dependable Quality

CRANE VALVES



CASE HISTORY FROM CRANE FILES

PROBLEM: To find a valve that would assure longer service in a continuous batch processing operation, and reduce costs of routine piping maintenance.

WORKING CONDITIONS: Valve to control flow of steepwater solution to steam-heated steeping tanks. Constantly exposed to weak acid vapors.

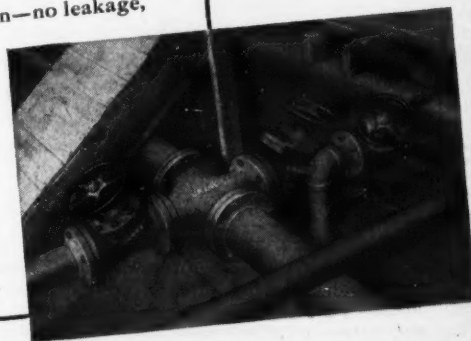
SOLUTION: Crane No. 1611 Diaphragm Valves, iron body, packless design, with separate disc and diaphragm.

RESULT: Costly problem of frequent repacking completely eliminated. Not a penny's maintenance cost—not a sign of corrosion or erosion—no leakage, or wear on internal parts—even after 4 years' service. Crane Diaphragm Valves have already given more than double the repair-free service obtained from conventional valves.

More proof of the fact that in all types of valves, Crane Quality assures the lowest cost service in the long run. That's why . . .
More CRANE VALVES are used than any other make!

The installation—at American Maize Products Co., Hammond, Ind.

No. 1611 Diaphragm Valve
 Literature on full line
 on request through your
 Crane Branch or
 Crane Wholesaler



CRANE

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill.

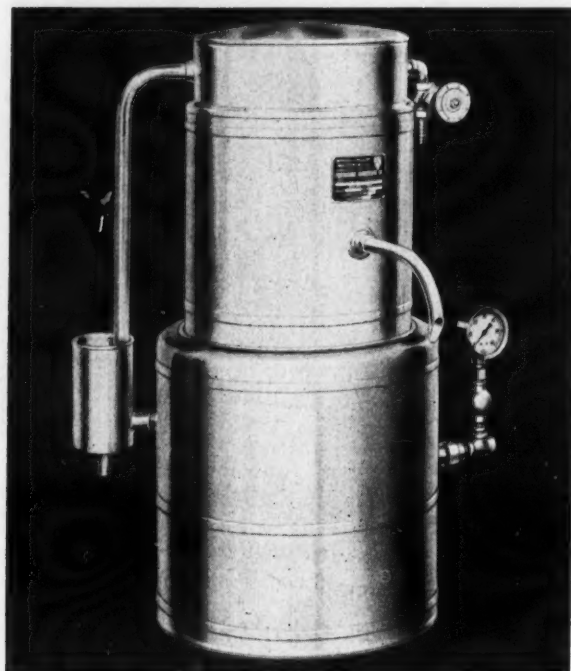
Branches and Wholesalers Serving All Industrial Areas

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 2283 on handy form, pgs. 2-3

For New **ECONOMY** in Laboratory Apparatus
lower cost, more volume—

Specify *** Precision** to be Sure



PRECISION Water-Still Line cuts costs for every gallon of pure distillate. Low price, especially in view of distinctive features. Less down-time because faster take-down, easier cleaning. Longer life through rugged construction, stainless steel, heavy tin lining, preheated water, thorough insulation. Bulletin 8-910

To make your work easier, surer, more economical, replace or implement your present facilities with selections from some 3,000 Precision products. "Utility" items as well as highly specialized instruments are built beyond duty requirements.

Order from your
Dealer NOW!
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Precision Scientific Company

3737 W. CORTLAND STREET—CHICAGO 47

* **FINEST** Research and Production Control Apparatus

NEW YORK • PHILADELPHIA • ST. LOUIS • HOUSTON • SAN FRANCISCO

When inquiring check CP 2284 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Fusing forms one-piece, bi-colored lens . . .

offers faster fitting time than conventional two half-lenses

Uses: Fused, one-piece, bi-colored lenses designed to protect eyes of workers engaged in heat treating and furnace operation, scarfing and burning operations, some open hearth and blast furnace operations, kiln processes, and welding.

Features: Lenses can be replaced in goggle frames more easily and quickly than conventional unit of 2 half-lenses.

Description: Fusing process eliminates light streaks. Lenses are of uniform thickness and have no rough edges. They are beveled to fit spec-



Two-tone lenses, shown set in cup-type goggles

tacle or cup-type goggles, and are made in regular and 6-curve, round and FV3 shapes. Various glass combinations are available to meet specific requirements.

Source: Lenses are products of American Optical Company, Dept. CP, Southbridge, Mass. . . . or for more information check CP 2285 on handy form, pages 2 and 3.

Adds, subtracts fractions; operates similar to a 'phone dial . . .

converts fractions to decimal equivalents; fits in pocket

Uses: Adds or subtracts fractions in units of 1/64ths.

Features: Saves time. Immediately convert fractions to complete decimal equivalents. Easy to use and operates like a telephone dial.

Description: The Fractionator is a circular device approximately 6" in diameter and consisting of 3 discs. The scale on the outer disc shows fractions in 1/32 increments and the



LINK-BELT "100" BELT CONVEYOR IDLER

Offers Outstanding Service Features

- **CLEAN OPERATION**—Seal keeps grease in, dirt out
- **LESS BELT WEAR**—Rolls smooth to minimize belt wear
- **STRONG CONSTRUCTION**—Roller Bearings of high-grade steel. Nuts and Yokes interlocked to prevent brackets from spreading. End Brackets riveted to provide stability, transmit load directly to steel bar feet
- **EASY LUBRICATION**—Grease Fittings provide easy and safe lubrication, protected within end bracket

Complete Link-Belt Line Includes

Troughed Belt Idlers • Return Belt and Flat Belt Idlers • Belt Training Idlers for All Belts • Rubber-Tread Troughed Belt Impact Idlers • Rubber-Tread Return Idlers • Special Types and Designs

SEND FOR BOOK NO. 1915

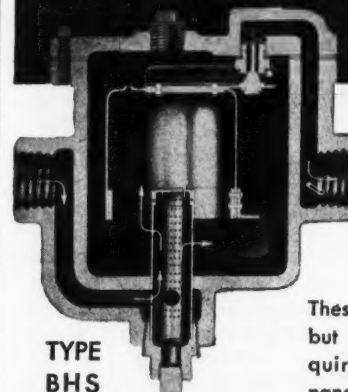
LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8.

Offices, Factory Branch Stores and Distributors in Principal Cities.

When inquiring check CP 2286 on handy form, pgs. 2-3

For Hard Service and High Pressure
Use SARCO Inverted Bucket
Steam Traps



TYPE
BHS

These traps are of simple but sturdy construction requiring minimum maintenance. Straight through con-

nections with inlet and outlet on same level. All mechanism attached to cover. Can be inspected or cleaned without disturbing piping. Since 1936 equipped with integral strainer. No separate strainer necessary. Sizes 1/2" to 2". Pressures to 900 p.s.i. Catalog No. 350.

284

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SAVES STEAM

SARCO COMPANY, INC.

Represented in Principal Cities

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SARCO CANADA, LTD., TORONTO 5, ONTARIO

IMPROVES PRODUCT QUALITY AND OUTPUT

When inquiring check CP 2287 on handy form, pgs. 2-3

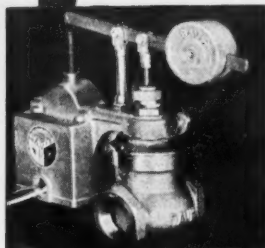
CHEMICAL PROCESSING

DAVIS SOLENOID VALVES

for—Steam, Air, Water, Oil

Applications,
Extreme Accuracy
Sizes 1/2" to 12"
Pressures to
1500 Lbs.

Davis No. 93 single-seated pilot operated solenoid valve. Sizes 1/2" to 4" for gas, steam or liquid service.



Davis Solenoid Valves are operated by any device that will make or break an electrical circuit, and are furnished either normally open or normally closed — explosion proof if desired.

Davis valves adapted to solenoid operation includes: single seated valves for high or low pressure, balanced valves, butterfly valves, and 3 or 4-way pilot valves. Reciprocating or rotary stem type. For extreme accuracy, the Davis Two-Step Solenoid Valve is available.

WRITE TODAY FOR DETAILS



DAVIS

2562 SOUTH WASHTENAW AVENUE, CHICAGO 8, ILL.

When inquiring check CP 2288 on handy form, pgs. 2-3

SPECIFY

THERMALLOY

heat and abrasion resistant castings

CHEMALLOY

corrosion resistant castings

Muffles • Retorts • Pots • Baskets
Trays • Fixtures • Furnace Parts

Heat, Abrasion and Corrosion Resistant Castings of all types

*Reg. U. S. Pat. Off.

AMERICAN

Brake Shoe

COMPANY

ELECTRO-ALLOYS DIVISION

LYRIA, OHIO

When inquiring check CP 2289 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

inner disc indicates fractions in 1/64ths. The center disc revolves and is dialed with a pencil point, exactly like a dial telephone.

For example, to add fractions 3/16, 5/32, 9/64 and 1/4 just dial center disc clockwise, using designated fractions shown in the upper portion of the inner and outer discs. The answer automatically appears in the answer slot together with its decimal equivalent. To subtract, dial the disc counter-clockwise, using the designated fractions appearing in the lower half of the circle.

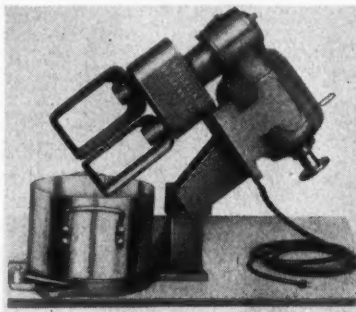
Source: Fractionator is a development of Charles E. Wells, Dept. CP, P. O. Box 25, Montrose, Calif. . . . or for more information check CP 2290 on handy form, pages 2 and 3.

Aids lab tests on mixing . . .

'change-can' mixer has efficient method of stirring

Uses: For mixing laboratory batches of 1 qt to 1 1/2 gal. Facilitates determination of formulae and other details in pilot sizes, prior to production cycles.

Features: Double-motion stirrers revolve about their own axes, and also around the circumference of the can, assuring a homogeneous mix in a short



Lab mixer provides efficient stirring action

time. Reported to be efficient for a wide variety of materials and different consistencies.

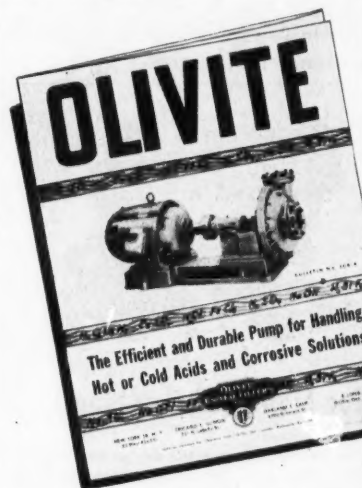
Description: Mixer operators on 110 volt AC. It has a variable-speed motor, and the direction of stirrer rotation can be reversed. Removable cans, and the stirrers are available in stainless steel or other metals.

Source: The No. 130-EL motor-driven laboratory "change-can" mixer is a development of Charles Ross & Sons Co., Dept. CP, 150 Classon Ave., Brooklyn, N. Y. . . . or for more information check CP 2291 on handy form, page 2 and 3.

OLIVITE ACID HANDLING PUMP

Pumping Clear Solution Chemicals?

Send for our Bulletin No. 308-R which gives full details of this sturdy durable pump, constructed of contact materials to withstand many different chemicals—acids and alkalis—hot as well as cold. Hydraulically, the Olivite Pump is a highly efficient centrifugal unit made in 1 1/4", 2 and 4 inch sizes. It is used in many industrial plants, some of them with more than 100 Olivites.



These two pumps are very popular because they move solutions and slurries at low cost and with negligible maintenance. We suggest you test these competitively in your plant. Buy one of each and put them to work on your toughest problems.

ODS SLURRY PUMP

Pumping Slurries or Sludges? . . . acid, alkali or neutral

Send for our Bulletin No. 309 which tells all about this efficient diaphragm slurry pump, operating without any mechanical linkage to the diaphragm. It's actuated by timed impulses produced by air or gas pressure or by vacuum. It is available in corrosion resistant construction. Several sizes ranging from 1 to 3 inches.



OLIVER UNITED FILTERS INC.



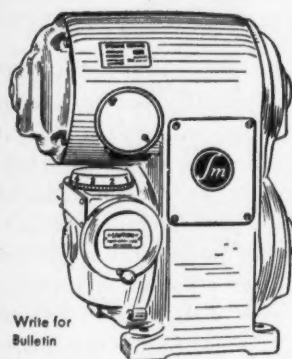
New York—33 West 42nd Street
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Export Sales Office—New York

Cable—OLIUNIFILT

When inquiring check CP 2292 on handy form, pgs. 2-3

THE
PERFECT
DRIVE



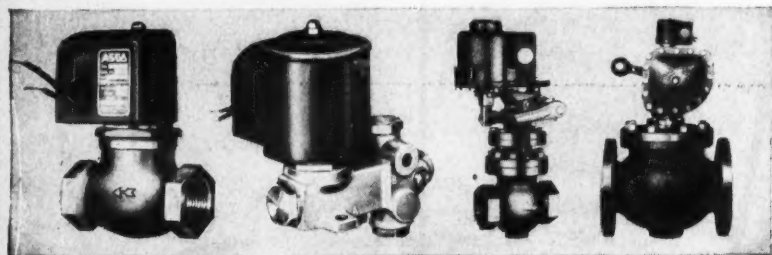
Co-ordinate your
production flow
with Sterling Speed-Trol
electric power drives.

STERLING
ELECTRIC MOTORS

Write for
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Plants: New York • Los Angeles • Hamilton, Canada
Offices in Principal Cities

SPEED-TROL (Variable Speed) • SLO-SPEED (Geared) • KLOSED (Normal Speed)
When inquiring check CP 2293 on handy form, pgs. 2-3



Ideal Automatic Control for Liquid or Gas Flow!

You can't beat the solenoid operated valve for many conditions where the flow of a liquid or gas must be automatically controlled. And the meaning of "controlled" covers quite a range of services. For example, in the line of ASCO Solenoid Valves you can get automatic control through the following, each functioning differently.

- Safety Shut-off and Trip Valves
- Shut-off Valves—Packed Type—
- Shut-off Valves—Packless Type
- 3-Way Pilot Valves
- 2-Way & 3-Way Pilot Controlled Valves
- 4-Way Pilot Valves

Everyone of these valves functions automatically either in an emergency or in timed

cycles, depending upon the design and application. Some reset manually; others, electrically. They are designed for use on pipe lines conveying liquids or gases or on processing machinery which must be protected by an automatic flow control or which requires automatic timing of the flow in its operation. We suggest that if some type of automatic control of liquid or gas flow is required in your plant, you investigate ASCO Solenoid Valves. They are constructed to meet many corrosive conditions and many have explosion-proof and water-proof solenoids. Many, too, are of the design approved by Factory Mutual and Underwriters' Laboratories.

In writing for literature, tell us in detail about your requirements.

When in need of Automatic Transfer Switches, Remote Control Switches, Contactors, Relays, and Specialized Electromagnetic Controls, come to us.



Automatic Switch Co.
379 LAKESIDE AVENUE • ORANGE, NEW JERSEY

When inquiring check CP 2294 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

From 1 to 4 decks in sifters

Six-page folder describes and illustrates series of sifters. Models are available with 1, 2, 3, or 4 decks of screens. Featured in these sifters is ball-cleaning device; balls rebound against screens to keep mesh from clogging.

"Ro-Ball Gyration Screens" is issued by The J. H. Day Company, Dept. CP, Cincinnati 22, O. When inquiring specify CP 2295 on handy form, pages 2 and 3.

Polyethylene dispenser is vented to prevent loss of liquid contents . . .

rise in liquid temp, drop in atmospheric pressure no problem

Uses: All-polyethylene bottle is recommended as a dispenser or wash bottle for many chemical reagents used in the laboratory.

Features: Improved bottle now incorporates a critically sized orifice which equalizes the pressure and prevents liquid from being forced out of the bottle when either temperature of



Handy polyethylene dispenser for
all lab reagents

liquid is raised or atmospheric pressure drops.

Orifice in the side of the inner tube permits adding small amounts of air to the liquid stream by forcefully squeezing the bottle. When used as a wash bottle, a gentle squeeze produces a stream without any air.

Description: The Aquet dispenser resists many chemicals, including hydrofluoric acid at room temperatures. Space is provided on label for indicating liquid contents.

Bottle as supplied comes filled with

Federated first for Lead Products

Asarco Sheet Lead . . . All commercial weights and sizes. Chemical . . . Tellurium Chemical . . . Antimonial.

Asarco Lead Pipe . . . All commercial sizes. Special sizes on request. Chemical . . . Tellurium Chemical . . . Antimonial.

Asarco Lead and Lead Lined Valves
• • • Split Type "Y" and "Angle", Standard "Y", Gate, Check, Hard Lead "Y", Plug and Seat.

Asarco Lead Fittings . . . Elbows, Crosses, Tees, "Y's", (with plain ends, with flanges on, or for flanging in the field). Chemical and Antimonial.

Asarco Lead Wool . . . 5/8" rope in 50 lb. waterproof bags.

Asarco Lead Specialties . . . Extrusions and Castings to specification.

See Federated also for Lead Lined Pipe
Lead Lined Fittings, Lead Lined Flanges

Federated Metals Division
AMERICAN SMELTING AND REFINING COMPANY,
130 BROADWAY, NEW YORK 5, N. Y.



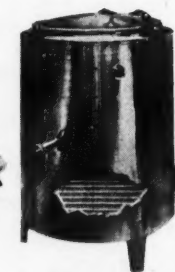
When inquiring check CP 2296 on handy form, pgs. 2-3



WIDE ADAPTABILITY

Kettles, ovens, drying machinery of all types, hamburger grills, glass annealers, space heaters, hot plates, high temperature air heating—are among the many successful applications.

If your product can be electrically heated . . . if it depends on long-sustained heating efficiency to fulfill its promise to the buyer . . . you can now back it up with a five-year heating unit guaranteed by using TRENT "FOLDED-and-FORMED" Heating Elements in NEW STANDARD RACKS.



FIVE-YEAR GUARANTEE . . . at Temperatures to 750°F. or 1350°F.

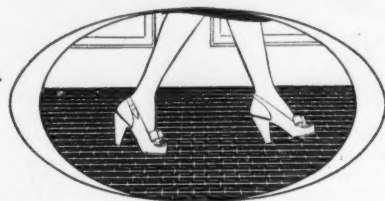
Size 12" x 12", or multiples thereof, quickly, easily installed—horizontally or vertically—to give 1.5 KW to 300 KW, at low cost. Drilled for mounting.

TRENT INC
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA.

When inquiring check CP 2297 on handy form, pgs. 2-3

CHEMICAL PROCESSING

THE SAFE OPEN STEEL FLOORING IS **TRI-LOK**



No object over $\frac{1}{2}$ square inch can pass through super-safe U-Type Tri-Lok Flooring. It is unsurpassed for plant installation, walkways, loading platforms. Maximum strength, air and light with minimum weight. Efficient distribution of concentrated loads. Write for Bulletin KA 1140.

The Tri-Lok Company is also equipped to furnish *riveted* and *Tri-Forge welded* open steel flooring. Tri-Lok can be furnished in a variety of metals, including aluminum alloy, stainless steel, etc.

DRAVO CORPORATION

National Distributor for the Tri-Lok Company

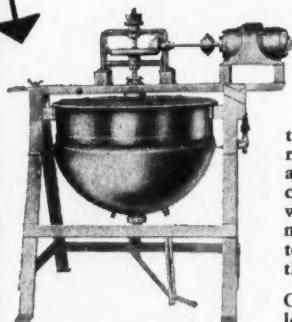
Dravo Building, Pittsburgh 22, Pennsylvania
Sales Representatives in Principal Cities



When inquiring check CP 2298 on handy form, pgs. 2-3

LEE headquarters for the Standard and Special Designs

CORROSION-RESISTANT KETTLES



Available in sizes up to 500 gallon capacity to meet every processing need. Easy to clean and keep clean, they are practical and meet all sanitary regulations. All Lee kettles are available with hydraulic cylinders where your own water line provides the necessary operating power to safely control tilting kettles and tilting agitators.

Our new descriptive bulletins sent on request.

LEE METAL PRODUCTS CO., INC.
418 PINE STREET, PHILIPSBURG, PA.

All Lee Kettles are made to A.S.M.E. Code

When inquiring check CP 2299 on handy form, pgs. 2-3

DECEMBER, 1950

PROCESSING EQUIPMENT

a surface active agent for cleaning laboratory glassware and utensils.

Source: Product of the Emil Greiner Co., Dept. CP, 20-26 N. Moore St., New York, N. Y. . . . or for more information check CP 2300 on handy form, pages 2 and 3.

Addends line of neoprene-coated gloves . . .

feature non-slip grip, non-bunching palm, curved fingers

Uses: For protecting hands from chemicals, as well as from temperature extremes.

Features: Three gloves are announced by manufacturer; all are neoprene coated. Non-slip grip permits holding wet things as if they were dry; palm design helps prevent bunching; and fingers are curved to provide hand comfort.

Description: Known as the Stan-zoil line, Extra-Duty types are canvas coated with red neoprene, and Heavy-Duty and Super-Duty types canvas coated with black neoprene. Linings are 8-oz canton flannel. Knit wrist as well as gauntlet styles are available. Types for hand protection in extreme temperatures are offered.

Source: The Pioneer Rubber Company, Dept. CP, Willard, O., is the maker . . . or for more information check CP 2301 on handy form, pages 2 and 3.

Grease in cartridge form applied to open gears by nozzled gun . . .

saves time, avoids spillage; melting point is above 400°F

Uses: Made especially for open gear service.

Features: Supplied in cartridge form to fit a nozzled gun applicator which ribbons grease and which often may be used while gears are moving. Saves time and avoids spillage.

Description: Grease is extremely tenacious and highly absorptive, water repellent with high resistance to removal. Melting point is above 400°F. Plasticity is retained at temperatures below freezing. A density suitable for sub-zero applications is also available.

Source: No. 32 grease is made by Keystone Lubricating Company, Dept. CP, 21st & Lippincott Sts., Philadelphia 32, Pa. . . . or for more information check CP 2302 on handy form, pages 2 and 3.

FOR TOUGH FILTERING

Use

NEWARK STAINLESS STEEL FILTER CLOTH

- CORROSION RESISTANT
- NON-CONTAMINATING
- RUST PROOF
- EASY TO CLEAN
- FREE, EASY FILTRATE DISCHARGE
- EXCEPTIONALLY LONG SERVICE LIFE

Check these operating advantages found in Newark Stainless Steel Filter Cloth. They may suggest the solution to one of your special filtering problems or they may be the answer to your need for a backing cloth that will really stand up through tough, corrosive filtering cycles.

Newark Stainless Steel Filter Cloth is easily adapted to practically all types of filters and is available in a wide variety of weaves. When writing please give us details on your process.

NEWARK
for ACCURACY

Send for our
New Catalog D.

Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

When inquiring check CP 2303 on handy form, pgs. 2-3

NO MATTER WHAT YOUR CRUSHING PROBLEM YOU'LL ALWAYS FIND THE RIGHT CRUSHER FOR YOU IN THE PENNSYLVANIA LINE

No one type of crusher meets all requirements. That's why Pennsylvania has a varied line, each in a wide range of sizes, capacities and speeds. This fact assures you of an unbiased recommendation from Pennsylvania engineers because they can recommend the crusher that fits your needs best. You'll find the "know how" and the right machine at Pennsylvania. The line includes

- STANDARD HAMMERMILLS
- REVERSIBLE HAMMERMILLS
- REVERSIBLE IMPACTORS
- SINGLE ROLLS
- * • DIXIE NON-CLOG HAMMERMILLS
- * • DIXIE STANDARD HAMMERMILLS
- KUE-KEN JAWS
- KUE-KEN GYRACONES

*On May 1st, 1950 the Bath Iron Works, through its subsidiary the Pennsylvania Crusher Co., purchased the Dixie Machinery Mfg. Co.

Never buy a crusher until you've checked with Pennsylvania... Catalogs on request. PENNSYLVANIA CRUSHER COMPANY, Division of Bath Iron Works Corporation, 1717 Liberty Trust Building, Philadelphia 7, Penna. Representatives in New York, Boston, Pittsburgh, Birmingham, Roanoke, Detroit, Chicago, St. Louis, Crosby, Minn., Los Angeles, London, England.

PENNSYLVANIA
CRUSHER COMPANY

When inquiring check CP 2304 on handy form, pgs. 2-3

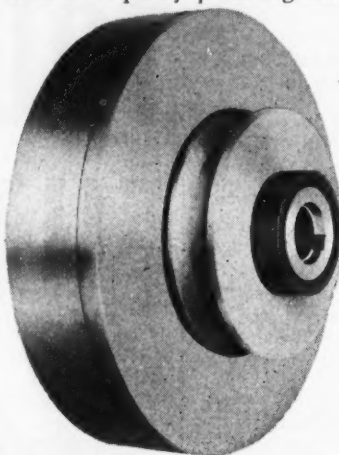
PROCESSING EQUIPMENT

Start motors without shock and reduce torque...

absorber can be used as coupling or for V-pulley, flat pulley, or sprocket

Uses: Provides smooth starting, absorbing jerk, which is occasioned in "across the line" motor starting. Can be used for V-pulley, flat pulley, or sprocket and can also be used as a coupling.

Features: Assures smooth starting with no power loss. Reduces torque by permitting motor to gain momentum



before picking up entire load. As absorber is not a clutch, there is no slipping, and it will carry any load the motor will pull.

Description: Absorber varies in size according to hp. That illustrated is 3/4 hp and measures 5 1/2" in diameter. Overall width, including V-pulley, is 2 1/2". Furnished for forward or reversing drives. There are two segments, one

working within the other, with one attached to drive shaft and the other to driven shaft. Spring is confined in drive segment and is subject to compression when power is applied to absorb shock. Made in sizes for motors 1/4 to 3 hp.

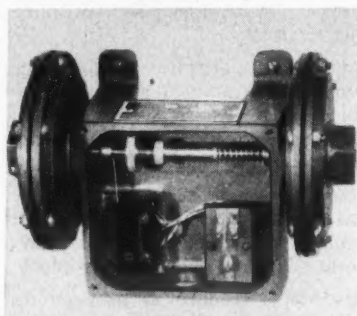
Source: Crown Mfg. Co., Dept. CP, 1025 N. 6th St., St. Louis 1, Mo. . . or for more information check CP 2305 on handy form, pages 2 and 3.

For regulating pressure between two vessels...

control is positively air tight on both vacuum and pressure side of diaphragm

Uses: Control is designed for use on very low differential pressure where regulation is required in inches of water, either pressure or vacuum, and where a leak path between diaphragm and atmosphere cannot be tolerated. Has numerous applications where it is necessary to regulate the pressure between two vessels.

Features: Air tight on both vacuum and pressure side of diaphragm. No leak is possible, since no seal of any kind is required.



Sensitive differential static pressure or vacuum control

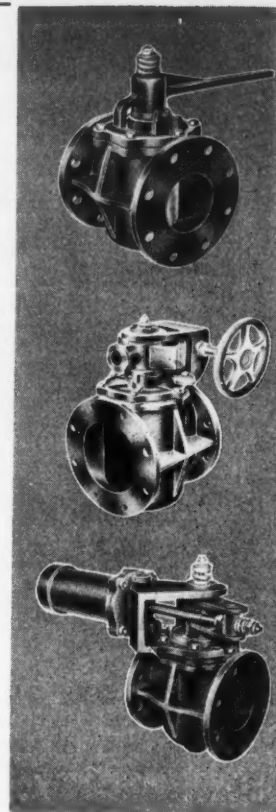
Description: Control is designated as Cat. 111-D Differential Pressure or Vacuum Control. Units are small in size, and are obtainable in standard ratings ranging from 0-20" of water pressure or vacuum. Range adjustment and fixed differentials can be had from 0.2-2" of water.

DeZURIK Has The AIRTIGHT ANSWER To Your VALVE PROBLEM

DeZURIK VALVES are famed for Airtight, drip-free closures on any flow, and the complete DeZurik line has the perfect answer for every valving requirement. Models for manual or remote control . . . 1-way to 5-way . . . 1/2" thru 20" . . . in all metals.

Write for catalog.

**DeZURIK
SHOWER CO.
SARTELL, MINN.**



When inquiring check CP 2306 on handy form, pgs. 2-3

UNEQUALED IN FILTERING CHEMICALS for— HIGH FLOW RATES LESS DOWN TIME POSITIVE CAKE STABILITY QUALITY, SPEED AND ECONOMY

SPARKLER FILTERS

Available in

stainless steel
mild steel
rubber lined
monel, nickel
bronze, Hastelloy
steam or brine
jacketed



Write Mr. Eric Anderson for personal service on your engineering problems.

SPARKLER MFG. COMPANY, Mundelein, Illinois

When inquiring check CP 2307 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Electrical ratings are UL-approved for 10 amp 125 v, or 5 amp 250 v (AC). Contacts are SPDT. Mounting is made on a vertical surface by means of three screws.

Source: Product of Coral Designs, division of The Henry G. Dietz Company, Dept. CP, 12-16 Astoria Blvd., Long Island City 2, N. Y. . . . or for more information check CP 2308 on handy form, pages 2 and 3.

Slip-on covers protect contents of drums and barrels . . .

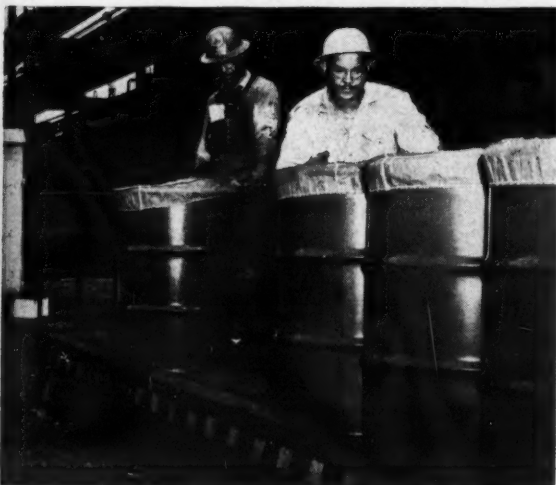
neoprene-impregnated kraft paper closures resist water, sunlight, oils, chemicals; are economical

Uses: Covers keep contents of drums and barrels clean and dry during in-plant shipment or storage.

Features: Neoprene impregnated in the kraft paper of which the covers are made adds to the wet strength and imparts resistance to sunlight, oils, and chemicals. One plant has found that rainwater can stand on the covers for days without sign of seepage through into contents of drums and barrels.

This same plant has discovered that the covers are more economical than regular closures, even though used only once (usually they can be used four or five times). This economy can be traced to two sources: relatively low initial cost, and easy attachment and removal.

Description: Covers are manufactured from a heavy, creped kraft paper that contains a small percentage of



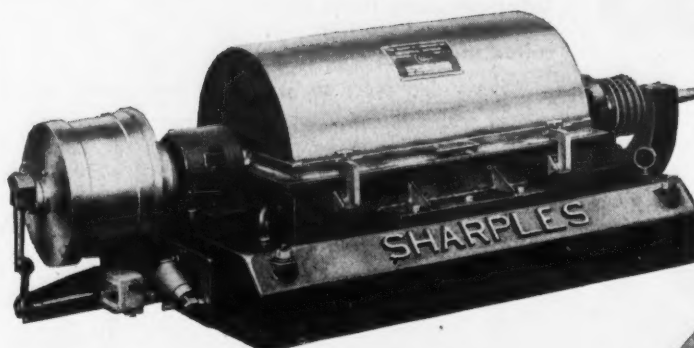
Neoprene-impregnated kraft paper covers protect contents of drums in this plant

neoprene latex. The latex is combined with the paper pulp at the paper mill.

The cover works like a housewife's refrigerator bowl cover. It has a round top, the diameter size of the barrel or drum, to which is stitched a short skirt hemmed with an elastic band around the bottom edge. When slipped over the top of a barrel or drum, the elastic holds the cover firmly in place.

At present, the covers are made only in one size — to fit a standard 55-gal drum or barrel. They are single-ply, two feet in diameter, with four-inch skirts. If demand warrants, manufacturer will make other shapes and sizes.

Source: Manufacturer is Chase Bag Co., Dept. CP, 309 W. Jackson Blvd., Chicago 6, Ill. . . . or for more information check CP 2309 on handy form, pages 2 and 3.



SHARPLES SUPER-D-CANTER—
The centrifuge for continuous Roughing-Out of solids from slurries.

SHARPLES DV-2
(externally controlled discharge) for continuous Selective Clarification of liquids.

The Combination

**for
CHEMICAL
PROCESSORS**



These two Sharples Centrifuges in combination offer a versatility of processing never before available to the Chemical Industry.

The Super-D-Canter effectively handles large quantities of solids, either crystalline or amorphous, and "roughs out" these materials prior to clarification.

The DV-2, which provides external control of solids content of the remaining liquid, clarifies to any degree desired, at the same time that it concentrates the solids and discharges them continuously.

The effective use of these two thoroughly proved centrifuges is a matter which the Sharples Engineering Staff will gladly discuss with you.

THE SHARPLES CORPORATION

NEW YORK 17, N. Y.
501 Fifth Avenue

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230 Congress Street

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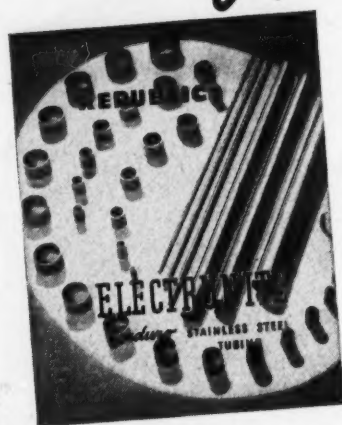
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ASSOCIATED COMPANIES AND REPRESENTATIVES THROUGHOUT THE WORLD
EXECUTIVE OFFICES AND FACTORY, 2300 WESTMORELAND STREET, PHILADELPHIA 40, PENNA.

When inquiring check CP 2310 on handy form, pgs. 2-3

STAINLESS STEEL TUBING

facts and figures



● Whatever your questions about stainless steel tubing and pipe . . . applications . . . fabrication . . . specifications . . . you probably will find the answers in this helpful 28-page booklet. It contains useful analysis tables, corrosion-resistance data and other material of value to every stainless steel tubing and pipe user.

Republic—world's largest producer of alloy and stainless steels—invites you to send for your **FREE** copy *today*.

REPUBLIC STEEL CORPORATION
STEEL AND TUBES DIVISION • CLEVELAND 8, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



ELECTRUNITE®
STAINLESS STEEL TUBING AND PIPE

When inquiring check CP 2311 on handy form, pgs. 2-3

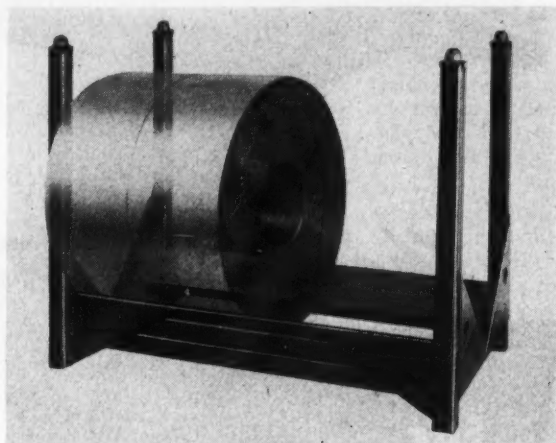
PROCESSING EQUIPMENT

Offers stacking racks for handling and storing coiled materials . . .

heavy duty types are safely and conveniently moved by cranes or trucks

Uses: Stacking type racks for handling and storage of materials in coil form. Capacity per rack is 10,000 lb.

Features: Each rack has nesting caps welded into tops of its tubular corner posts. These firmly engage the



Load capacity of coil racks is 10,000 pounds

bottoms of the corner posts of the rack tiered above it for convenience and safety in storage.

Description: Extra heavy duty coil racks are of tubular, all-welded steel construction. They are designed so that the entire weight of the upper tiers is adequately carried by the corner posts of the lower tiers. There is no stress upon materials stored in racks. Racks can be moved safely by truck or crane from receiving, through storage, to production lines.

Source: Product of American Sales Engineers, Dept. CP, 141 W. Eight Mile, Detroit 3, Mich. . . or for more information check CP 2312 on handy form, pages 2 and 3.

Mix chemicals with sewage, industrial wastes without use of mixing tanks . . .

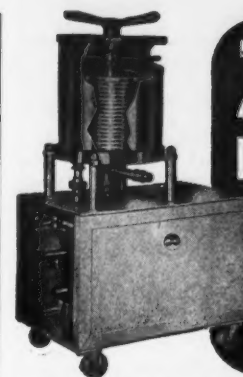
units consists of one or more mixing stages; forms part of influent piping

Uses: Accomplishes, violent uniform blending of water, sewage or industrial wastes with a liquid, one or more chemicals, or gases without the use of a mixing tank.

Features: Offers operating advantages where space and head is at a premium and can be installed in vertical, inclined or horizontal position. Mixing action is visible through transparent observation port, which may be opened for examination of physical elements. Practically all applied energy is utilized in a localized zone of violent motion through which all raw liquid must pass, thereby achieving utmost mixing efficiency per hp input. This assures proper treatment and economical use of chemicals.

Costly and space-consuming tank or mixing chambers in new plants are eliminated. In existing plants equipment is easily installed.

Description: Unit is constructed of one or more mixing stages and forms part of influent piping. Each stage consists of a diffusing impeller rotating in a blending



**ERTEL CYLINDER TYPE
Positive Seal
DISK FILTER**

1. FILTERING ELEMENTS are independently tightened to provide positive seal.
2. OUTER CYLINDER is closed by separate handwheel to prevent drippage or evaporation.

★ This multi-purpose filter will operate with a lesser number of sheets than its rated capacity if so desired. Unit is arranged to make reloading and cleaning as easy as possible. Rigidly constructed inlet and outlet rings insure a positive seal and thus eliminate the danger of bypassing unfiltered liquid. Fully illustrated in bulletin ECD-1 which gives complete specifications.

USES: Drugs, Cosmetics, Lotions, Perfumes, Wines, Whiskies, Cordials, Rums, Cider, Extracts, Water, Syrups, Hospital Supplies, Plating Solutions such as copper, nickel, chrome, tin, Chemicals, Antiseptics, etc.

**ERTEL ENGINEERING
CORPORATION**
KINGSTON NEW YORK

New York City Sales: 40 West 48th Street, N. Y. 19, N. Y.

ASBESTOS FILTER SHEETS • ASBESTOS SHEET FILTERS
CYLINDER TYPE DISC FILTERS • PYROGEN FILTERS
VACUUM BOTTLE FILERS • PUMPS • MIXERS • CAPPERS

When inquiring check CP 2313 on handy form, pgs. 2-3

DEMING PUMP

saves owner **\$900.00**

per year on water

Factory water supply cost a small manufacturer \$1200.00 a year. A check-up was made to determine the cost of drilling a well and installing a Deming Deep Well Turbine Pump.

As a result of the check-up the installation was made. The annual saving on water averages \$900.00

Savings as high as 60% on water costs have been made with Deming Deep Well Turbine Pumps. A Deming Distributor is near you to help YOU check up on YOUR costs of water.

In the meantime, write for the free BULLETIN 4700 which explains details about Deming Deep Well Turbine Pumps.

THE DEMING CO. • 522 BROADWAY • SALÉM, OHIO

Deming Pumps

When inquiring check CP 2314 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

chamber, driven by a continuous shaft direct-connected to the prime mover. Introduction of chemicals to each chamber is made through a tube specially adapted for handling the applied solution. The number of diffusing stages can be selected to comply with the number of chemicals requiring mixing in a particular process.

Simplicity of design and construction contribute to trouble-free operation. Rotating elements are fabricated from materials suitable for the specific conditions under which they are to operate. Interior surfaces of the body and diffusing chambers may be protectively coated for corrosion conditions. Combination packing box and thrust bearing, which are built-in features of the discharge head, protect the prime mover against leakage and excessive thrust loads. Prime mover and rotating element may be removed without dismantling assembly. Available in single or multiple units in sizes from 6 to 24".

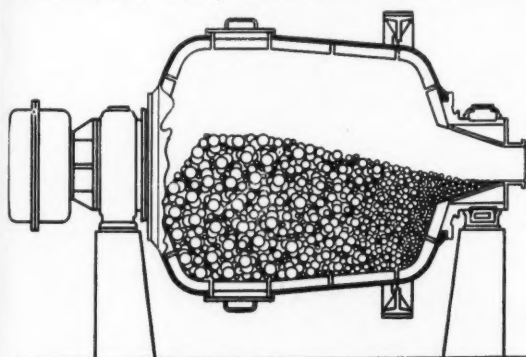
Source: Homomix units are built by American Well Works, Dept. CP, Aurora, Ill. . . . or for more information check CP 2315 on handy form, pages 2 and 3.

Tapered shape of ball mill increases crushing force . . .

larger balls remain at feed end where maximum energy is needed for coarse material

Uses: For wet and dry grinding and pulverizing applications.

Features: Slightly tapered shape of mill keeps the larger grinding balls at the feed end. Operating advantages of this equipment include a) the large balls remaining at feed end to crush the coarser incoming materials; b) maximum energy is gained at the feed end, where diameter is greatest and where greatest crushing force is needed, and c) convex heads increase ball tur-



Mill design eliminates dead corners

bulence and eliminate dead corners; d) nearly spherical shape provides maximum working volume for minimum liner surface, resulting in lower overall mill dead-weight, less bearing friction, lower power, and lower liner consumption per ton of material ground; e) less wear on discharge grate when used, tapered barrel keeping larger balls away from grate.

Description: Structurally the mill consists of a conical or convex feed head; a short cylindrical section, a long tapered conical section, and a wide-angle conical or convex discharge head. It is basically a union of three truncated cones of varying degrees. In certain cases, the cylindrical section is omitted entirely.

Source: "Tri-cone" ball mills are built by Hardinge, Inc., Dept. CP, York, Pa. . . . or for more information check CP 2316 on handy form, pages 2 and 3.

TIPS ON SOLVING DRYING PROBLEMS—NO. 5



IS THERE SUCH A THING AS GUARANTEED PERFORMANCE FOR DRYING SYSTEMS ?

There most certainly is such a thing as guaranteed performance. Every piece of Proctor drying equipment sold has a guaranteed performance rating written into the sales contract. The equipment must perform according to this guarantee before Proctor engineers consider their work completed.

Guaranteed performance is possible for Proctor equipment because nothing is left to chance at any stage in its development. A Proctor representative will talk with you the moment you realize you need drying equipment . . . will help you establish your requirements in specific terms . . . will assist you in considering preliminary and subsequent processing so that drying becomes an integrated part of the over-all process . . . will work closely with you as test work proceeds either in Proctor laboratories or your own plant . . . and will be in constant touch with the engineering, building, and installation of your equipment.

Guaranteed performance is no mere advertising phrase . . . but is exactly what you buy when you specify Proctor "job engineered" drying equipment.

The next time a drying problem presents itself—remember you can buy guaranteed performance by calling Proctor engineers into the picture early!

For the complete story of the Proctor approach to solving drying problems, write for Bulletin 361. For a lucid explanation of Proctor Drying Systems for the Process Industries, ask for Bulletin 342 as well.

A FEW TYPICAL MATERIALS BEING DRIED IN PROCTOR CONTINUOUS CONVEYOR SYSTEMS

Starch
Titanium Dioxide
Sulfa Drugs
Calcium carbonate
Magnesium carbonate
Clay
White Lead
Finished Lithopone
Soy Bean Protein
Lead arsenate
Nitro guanadine

PROCTOR CONTINUOUS CONVEYOR SYSTEMS

PROCTOR & SCHWARTZ INC • 663 TABOR ROAD • PHILADELPHIA 20 • PA •

When inquiring check CP 2317 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Teflon seats adapt valves for corrosive service . . .

seats are renewable, held in place by bonnet extension, and completely contained when valves are closed

Uses: Needle valves for corrosive liquids at pressures to 3000 lb WP.

Features: Teflon seats are renewable, held in place by special extension of valve bonnet, and are completely contained when valves are closed by spindle point and stem shoulder.

Description: Valves are union bonnet type with outside stem thread, rising stem, and handwheel. Bodies are forged from Alloyco, monel, nickel, and other specified materials. Sizes are $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1". End to end, valves measure from 2- $\frac{3}{4}$ to 4"; centerline to top with valve opened, they measure from 5- $\frac{1}{8}$ to 7- $\frac{1}{2}$ ".

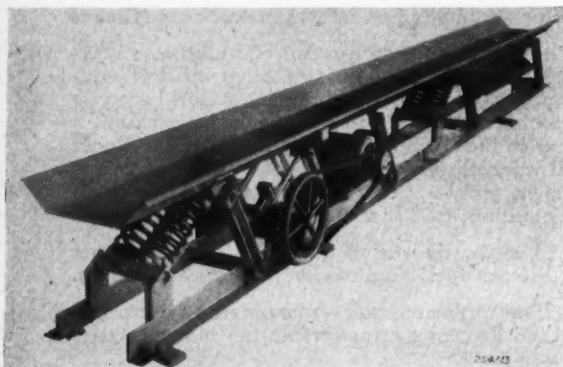
Source: No. 621 $\frac{1}{2}$ needle valves are made by Alloy Steel Products Co., Inc., Dept. CP, Linden, N. J. . . . or for more information check CP 2318 on handy form, pages 2 and 3.

Move bulk materials rapidly with little power on natural frequency conveyors . . .

units operate at the exact natural frequency of their springs, give cooling, drying action

Uses: Handle sand, coal, alumina, sulfur and various chemicals, graphite, plastics, frit, glass, mill scale, and machine turnings. Also move hot, oily, wet or stringy materials and those that are abrasive, sharp, or jagged.

Features: Operate on natural frequency principle to provide a unique "directional-throw vibrating conveyor". While mounted on springs and in other ways similar to other vibrating conveyors, these units operate at the exact



Conveyor with grill also serves as separator

natural frequency of their springs. Materials are conveyed smoothly at high speeds along a flat surface or upwards as much as 10°, with an absolute minimum of power and at a speed of up to 24" per second.

There are few moving parts, and action is gentle. Springs, drive shaft, eccentric and other components are designed for such wide safety margins that breakdowns and repairs are held to an absolute minimum. There are no bearings or moving parts except in the drive mechanism.

In addition to conveying, these units are efficient in screening, blending, drying, and cooling. They are very serviceable where screening must be combined with conveying.

Description: Conveyors consist of a steel pan, mounted



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MULTIWALL BAGS**
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International Paper
Company's 52 years
of experience in
quality control of
paper and
bag manufacture.

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IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa.



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IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa.

When inquiring check CP 2319 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

on springs, and vibrated by a motor-driven eccentric. Pan, however, can be of any metal, or of any shape from a round tube to an open trough with sides.

When assembled at factory, a conveyor's adjustable pulley is locked permanently after speed is set at lowest ammeter reading. A very small motor vibrates pan in natural frequency of springs. Capacity ranges from a dribble to as much as 200 tons per hour on horizontal hauls. Only $\frac{1}{4}$ hp per 25 tons conveyed for each 10' of level length is required. Widths vary from 6 to 48" and lengths from 5' to 200'.

Vibration-free units are available for service where firm foundations are not available. These balanced units need not be bolted to floor. They are also supplied with wheels but do not creep.

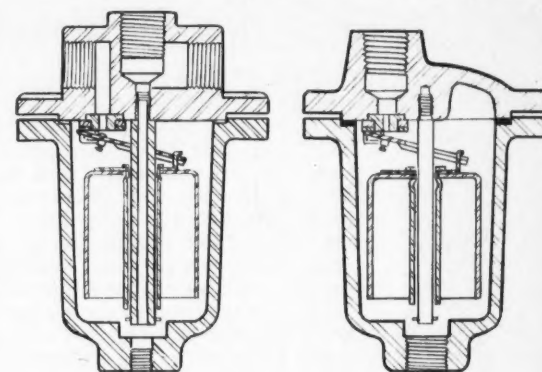
Source: Natural frequency self-cleaning conveyors are built by Whitley-Carrier Co., Inc., Dept. CP, 805 West Main St., Louisville 2, Ky. . . . or for more information CP 2320 on handy form, pages 2 and 3.

Safety features included in two steam traps for super-heated service . . .

forged steel heads and bodies withstand shock, explosions; recessed gaskets prevent blow outs

Uses: Steam traps are suitable for super-heated steam service — temperatures to 800°F, pressures to 500 lb, and for connection to $\frac{1}{2}$ or $\frac{3}{4}$ " pipes.

Features: Safety factors are outstanding — head and body are of forged steel to withstand shock and explosions;



Sectional view of #340 Sectional view of #60

Steam traps are serviceable at temperatures to 800°F, pressures to 500 lb

internal parts are fabricated from stainless steel, and seat is a special alloy developed for steam service; recessed gasket is incorporated to prevent blow out.

Description: Traps are available in two principal types. No. 340 is for installation straight-in-line or as an elbow, eliminating nipples and fittings as well as saving approximately 1-hour installation time. No. 60 has inlet in the bottom and outlet connection in the top for vertical installation.

Both types are additions to maker's Super-Silvertop line of traps, being characterized by minimum of moving parts and guided bucket for positive valve closing.

Source: Product of the V. D. Anderson Company, Dept. CP, 1966 West 96th St., Cleveland 2, O. . . . or for more information check CP 2321 on handy form, pages 2 and 3.

SPEED TUBE MAINTENANCE

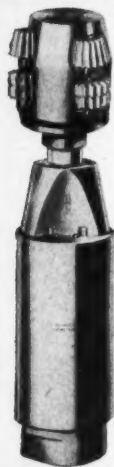
...with the WILSON-DUDGEON Model 50 Refinery Expander

YOU CAN BE SURE of fast easy rolling and solid seating of furnace, still and other heavy wall tubes with the specially designed self-feeding and parallel rolling Wilson-Dudgeon Refinery Expander. These expanders are available in multi-roll types, with and without flare rolls, thrust collars and "ironing-our" attachments. There is a Wilson-Dudgeon Expander available for any type of refinery fitting.



Model 50
Refinery
Expander

...with the WILSON EP Series Air Motor and Model R Cutter Head



Wilson
EP Series
Air Motor
with Model R
Cutter Head

YOU CAN PUT refinery equipment back "on the line" faster with the Wilson EP Series Air Motor and Model R Cutter Head. Size-for-size, the Wilson "EP" can develop up to 40% more power than ordinary motors. This extra power permits faster cutting action to remove hard heavy deposits in a hurry . . . even from tubes with large diameters. The "R" Cutter Head has renewable cutter pin bearings . . . works at faster cutting speeds . . . is self-feeding and non-tracking.

WRITE TODAY—or see your Wilson representative—for complete information on this time-saving, economical tube maintenance equipment. Ask for Bulletin 380 on Tube Expanders, 47A on Tube Cleaners.

THOMAS C. WILSON, INC.
21-11 44th AVENUE, LONG ISLAND CITY 1, N. Y.
CABLE: TUBECLEAN, New York

WILSON

WILSON TUBE CLEANERS
WILSON-DUDGEON TUBE EXPANDERS AND SPECIALTIES

When inquiring check CP 2322 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

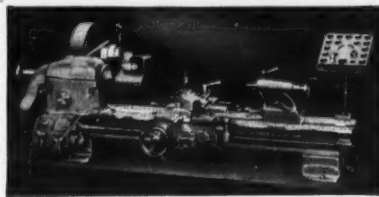
Precision toolroom work afforded by use of 1/2-hp lathe . . .

takes work up to 10" diameter, with distance between centers ranging to 28 1/8"

Uses: Small lathe designed primarily for precision tool room work. Lathe will accommodate work up to 10" diam, with distance between centers to 28 1/8".

Features: Attachments, tools, and accessories can be furnished so that many jobs can be handled which ordinarily require special machines.

Description: Lathe is powered by 1/2-hp motor. Headstock is back geared, providing spindle speeds ranging from 48 to 1435 rpm. Delivered complete with lead screw having 0.0015" max lead variation per foot; collet attachment; collet rack; taper attachment; thread



Lathe is powered by 1/2-hp motor

dial indicator; thread cutting stop; large face plate; and micrometer carriage stop.

Tailstock spindle has 0.1" graduations, and tailstock screw has micrometer collar reading in thousandths. Regular equipment includes power feed apron; graduated compound rest; small face plate; two 60-degree centers; headstock spindle center sleeve; and gear box providing thread cutting range of 48 pitches, 4 to 224 per inch RH or LH, and 48 longitudinal power feeds. Carriage lock is provided for precision facing operations.

Bed lengths of 3, 3 1/2, and 4' are available, with maximum distances between centers of 16 1/8, 22 1/8, and 28 1/8" respectively. No. 2 Morse taper centers are used in the headstock and tailstock spindles. Max collet capacity is 5/8"; hole through spindle is 27/32"; swing over bed, 10" — over saddle wings, 9-15/16" — over saddle cross slide, 6 1/4". Tailstock spindle travel is 2 1/8". Cross slide travel is 5-7/8", and angular feed of compound rest is 2 1/4".

Source: Light Ten lathe is made by South Bend Lathe Works, Dept. CP, South Bend 22, Ind. . . or for more information check CP 2323 on handy form, pages 2 & 3.

Windows snap on head gear, providing face shield to meet specific service . . .

clear, green or screen windows made in many sizes; bar welding flash, chips, sprays

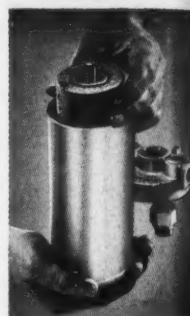
Uses: Two models of this shield cover a range of services: providing facial protection against exposure in spot, flash and butt welding, sawing, buffing, polishing, sanding, grinding and working with chemicals.

Features: Head bands designed for permanent comfort and easy, instant adjustment. Rear section is swiveled to permit up and down movement.

Size adjustment mechanism is enclosed within a flat, smooth sleeve around the rear headband. Mechanism comprises a series of holes and locking studs completely enclosed within the sleeve.

Description: In addition to rear section, shield has a band fitting across top of head. Front of headgear has

Fluid AS CLEAN AS YOU WANT Filtered FOR LESS THAN YOU EXPECT



Many chemical firms now get perfectly satisfactory fluid cleaning—without an expensive filter.

Cuno MICRO-KLEAN replaceable-cartridge micron filter removes all solids larger than specified (10, 25 and 50 micron densities available) . . . plus a large proportion down to 1 micron.

Savings come from:

- Lower initial cost saves investment
- Greater capacity, higher flow rate—saves space
- Double cartridge life saves replacement
- Resin-impregnation saves trouble (no shrinking, swelling, channeling)
- Quick and clean cartridge changing saves maintenance

MICRO-KLEAN handles wide range of fluids at wide range of flow rates.

Write for Bulletin MK-035. Address Cuno Engineering Corporation, 1626 South Vine Street, Meriden, Connecticut.

Fluid Conditioning
Removes More Sizes of Solids
from More Types of Fluids

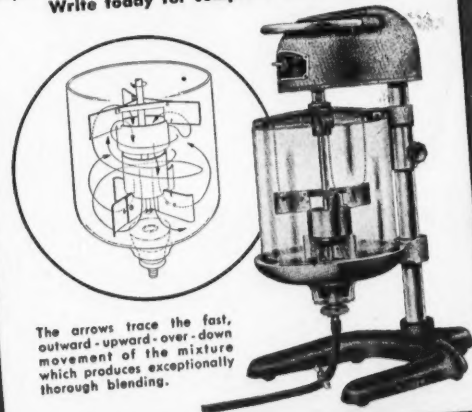


NO FLUID IS BETTER THAN ITS FILTRATION

When inquiring check CP 2324 on handy form, pgs. 2-3

the NEW FISHER-GOLDMAN MIXER

The Fisher-Goldman Mixer has a unique arrangement of stirrers and baffles; vastly more effective than ordinary stirring or mixing. Capacity up to three gallons; useful for small production batches, laboratory, pilot plant blends. Completely new departure in mixing technique. Price \$225.00. Write today for complete information.



The arrows trace the fast, outward-upward-over-down movement of the mixture which produces exceptionally thorough blending.

Headquarters for Laboratory Supplies
FISHER SCIENTIFIC COMPANY
PITTSBURGH • ST. LOUIS • NEW YORK
WASHINGTON • MONTREAL

When inquiring check CP 2325 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

leather sweatband which snaps into place. Windows also snap quickly onto headgear. They may be clear, green or wire screen in sizes and thicknesses to meet requirements.

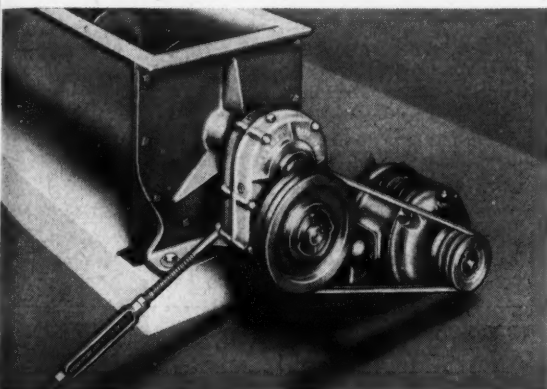
Source: Fendall Company, Dept. CP, 4631 No. Western Ave., Chicago 25, Ill. . . . or for more information check CP 2326 on handy form, pages 2 and 3.

Shaft-mounted reducer range is 115-330 rpm . . .

easy installation of torque arm unit saves cost of foundation, flexible couplings, base

Uses: For output speeds from 115 to 330 rpm by means of four different models covering capacities up to 24 hp.

Features: Said to be the first and only shaft-mounted reducer designed for this speed range. This method of mounting eliminates special engineering, cost of foundation, flexible couplings, sliding base and time consuming



Single speed reduction unit driven by sheave

operation of lining up. Accurate adjustment of belt tension can be made quickly and easily by operating turn-buckle in torque arm.

Description: Compact unit is locked securely to the shaft-to-be-driven by means of two steel locking collars, one on each side of the reducer. It is anchored to the floor or any other fixed object by the torque-arm. While the reducer can be driven through any V-belt drive, use of maker's sheaves offer conveniences in installation and removal. Flat belt drive can also be used. Any required output speed within recommended range can be obtained with stock sheaves properly related to size. Variations of speed are accomplished by simply changing sheave sizes.

Transferring the unit from one machine to another is simplified by the use of interchangeable shaft-keyed bushings which adapt shaft sleeves to different shaft sizes.

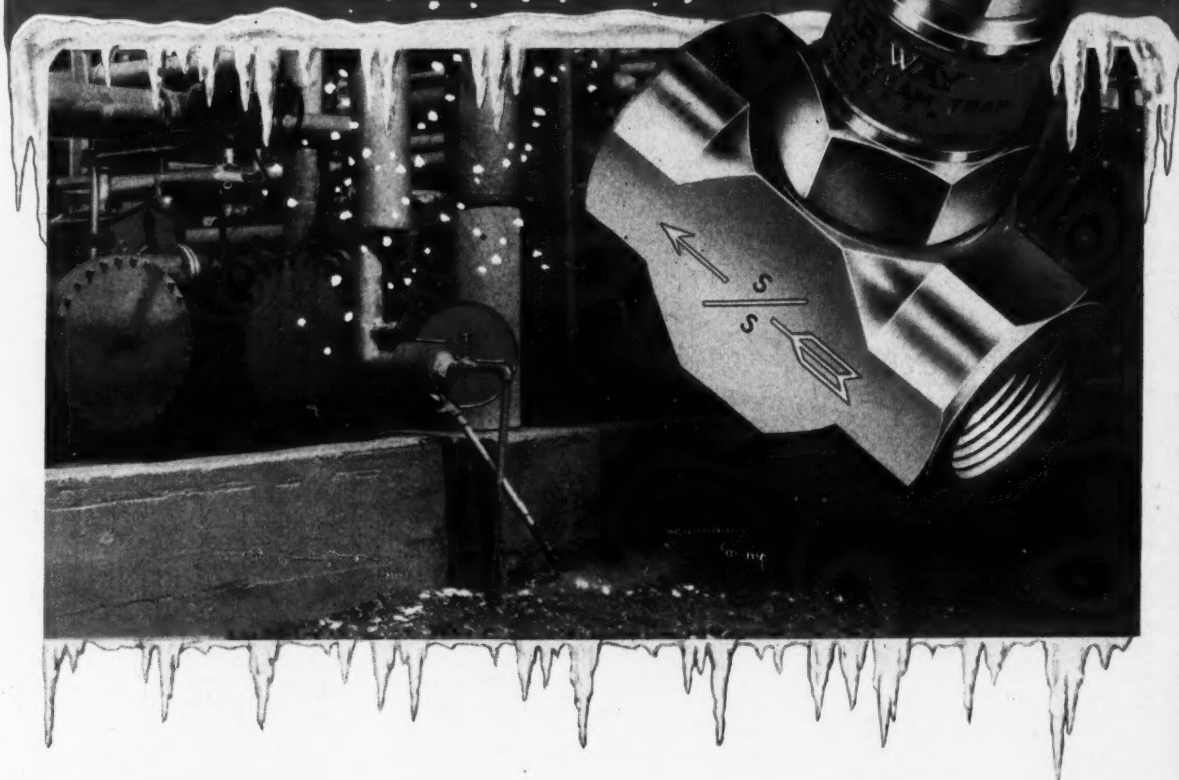
Construction features include a carefully machined cast iron housing, deep groove ball bearings, and helical steel gears which are shaved for quiet operation and heat treated. All units are comparatively light, #12 weighing only 49 lb.

Simple and positive backstop is provided. To prevent reversal of direction of load, it is easily and quickly installed on input shaft within the reducer where it is sealed against dust.

This 115-330 series of single speed reduction units augments maker's double reduction torque arm units.

Source: Shaft mounted reducers are made by Dodge Mfg. Corp., Dept. CP, Mishawaka, Ind. . . . or for more information check CP 2327 on handy form, pages 2 and 3.

YARWAY STEAM TRAPS DO NOT FREEZE UP



What if it is freezing cold—your exposed steam traps won't cause you any worry if they're Yarway.

Yarway Impulse Steam Traps don't freeze because condensate does not accumulate. The only moving part—a little valve—is continually testing for condensate and passing it as soon as it forms. It never waits for a trapful to collect. Hence, there's never anything to freeze.

There are other good reasons, too, why more than 650,000 Yarways have been bought for both indoor and outdoor installations.

They get equipment hotter, sooner. They are small in size, light in weight, easy to install and maintain. They are good for all pressures. Construction is stainless steel.

Prove these advantages in your own plant at our expense. Try a Yarway for free. Call your nearby Yarway distributor or write direct to . . .

YARNALL-WARING COMPANY

125 Mermaid Avenue, Philadelphia 18, Pa.

BRANCH OFFICES IN PRINCIPAL CITIES

Stainless Steel Body

YARWAY IMPULSE STEAM TRAP

When inquiring check CP 2328 on handy form, pgs. 2-3

Dependable FIRE PROTECTION...

STARTS WITH
ANSUL
Water-tight
CONSTRUCTION

The new, improved Ansul Model "B" Extinguishers have the greatest fire-killing ratings* ever attained by hand portable fire extinguishers. In addition, WATER-TIGHT CONSTRUCTION, (exclusive with ANSUL) has resulted in far greater dependability than any other dry chemical extinguisher.

In fire protection equipment, the best is none too good. Accordingly, Ansul engineers conduct continuing research for improving Ansul Extinguishers and Dry Chemical. Ansul Quality has set a high standard for newcomers in the dry chemical fire extinguisher field. This unparalleled standard of quality is constantly being raised by Ansul research and development.



Send for File No. 605. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

*Factory Mutual Laboratory Reports of Examinations and Tests.

ANSUL
CHEMICAL COMPANY
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DISTRIBUTORS
IN ALL PRINCIPAL CITIES IN THE
U. S. A., CANADA AND OTHER COUNTRIES

"PLUS-FIFTY"
DRY CHEMICAL
IS MORE DEPENDABLE

ALL-WAYS!

THIS TRADE MARK ASSURES YOU OF QUALITY PRODUCTS



CUTAWAY
VIEW, ANSUL
MODEL 20-B

Exclusive Features

- Patented Nozzle assures most effective stream pattern . . . Best results by inexperienced operators.
- Special packings in Nozzle and other parts exclude water.
- Corrosion resistant construction throughout.
- Easy on-the-spot Recharging (No tools needed).
- Quick, positive puncture operation.
- Special cartridge guard protects cartridges . . . rugged construction throughout.
- Ansul "PLUS-FIFTY" Dry Chemical used exclusively.
- Field tested by thousands of satisfied customers.



PROCESSING EQUIPMENT

Presents mixing data and equipment

Four-page bulletin shows line of custom-built mixing and agitating equipment. Machines handle liquid, semi-plastic, or powdered materials. Also available is technical chart which shows power requirements for liquid agitation.

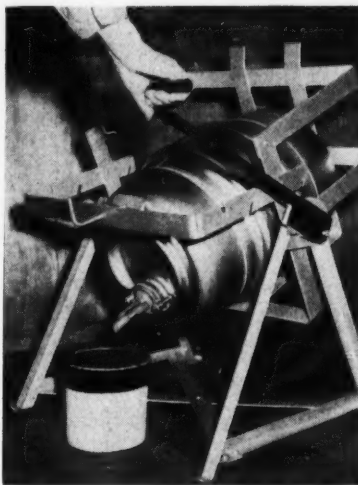
Bulletin 101 and Technical Data Chart T3-1 are issued by Process Industries Engineers, Inc., Mfg. Div., Dept. CP, 5941 Baum Blvd., Pittsburgh 6, Pa. When inquiring specify CP 2330 on handy form, pages 2 and 3.

Pouring from barrels speeded by tilter-spout combination . . .

tilter locks at any angle; spout has air vent for even flow

Uses: Tilter with pouring spout provides a safe, fast, and convenient method for draining acids and other liquids from stainless steel barrels.

Features: Locking device permits the tilter to be positively held at any angle for pouring so that the entire operation can be performed by one



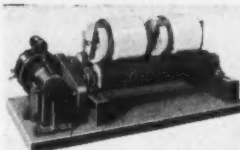
Tilter and pouring spout for safe, speedy draining of stainless steel barrels

man. Safety air vent pouring spout assures an even flow of liquid without spurts or splashes.

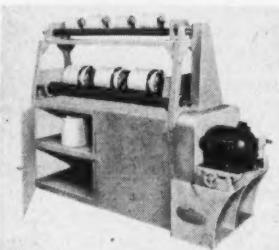
Tilter can be left in a tilted position with liquid level just below spout, making it unnecessary to swing drum from upright into pouring position each time a number of small containers are being filled.

Description: Cradle and supporting base of the GS Tilter #11 are of structural steel; all members are either riveted or welded to form a rigid unit. Long handle of tilter permits operator

Easiest Simplest Way to Grind Small Batches



WITH **ABBÉ**
JAR ROLLING
MACHINES



● Multiple Jars of Material—Wet or Dry—Processed Simultaneously

● Just Place Jars on Rollers—No Clamping or Fastening

● Handle All Size Jars or Bottles in One Operation

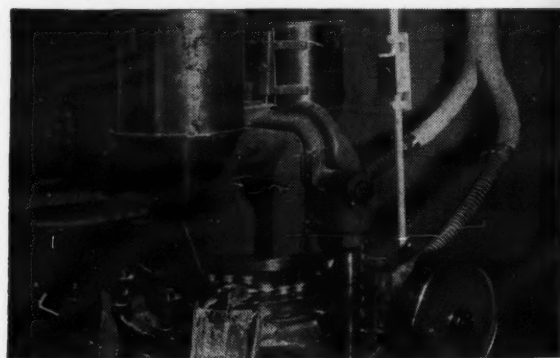
● To Remove Simply Lift Off Any Jar

Write for
Catalog 63

Made with rubber-covered steel rollers of any desired length to handle single or parallel rows of jars, and in double or triple tiers for as many jars as are desired from 1 qt. to 6.6 gal. each. Built-in cabinet optional.

ABBÉ ENGINEERING CO.
46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 2331 on handy form, pgs. 2-3



PELLET MACHINE AIDED BY VACUUM

The illustration shows one of a battery of pill machines, each of which is piped to the Spencer Stationary Vacuum System. Two rows of pills are stamped out of powder and all excess dust is removed by the application of vacuum just above and below the openings in rotating discs on either side of the machine. The pellets are clean and ready for packaging when they leave the machine and no dust is allowed to float around the room.

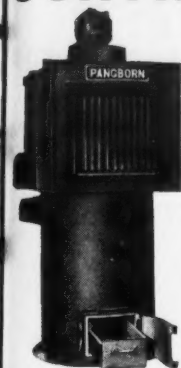
356-H

150 USES FOR VACUUM...ASK FOR BULLETIN
SPENCER VACUUM
HARTFORD CLEANING
THE SPENCER TURBINE COMPANY, HARTFORD 6, CONN.

When inquiring check CP 2332 on handy form, pgs. 2-3

When inquiring check CP 2329 on handy form, pgs. 2-3

CONTROL DUST



at dust source
with Pangborn

"CK" Unit Dust Collector

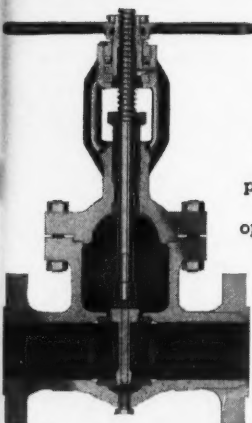
IF DUST smothers your plant, install Pangborn "CK" Unit Dust Collectors in each area with heavy dust concentration. They offer two stage separation by proved centrifugal and cloth screen methods; motor driven shaker requires minor upkeep. Delivered assembled in capacities of 1000 to 3000 cu. ft. per minute.

WRITE FOR free INFORMATION! Send us your problem, we'll send data on the unit you need. Address: PANGBORN CORPORATION, 2700 Pangborn Blvd., Hagerstown, Md.



When inquiring check CP 2333 on handy form, pgs. 2-3

Edward CAST STEEL GATE VALVES



Exclusive test method, requiring both seating faces of Edward cast steel gate valves to seal simultaneously, assures drop tight closure. Guide ribs, welded to body after seat rings and wedges are located, provide perfect alignment of working parts and reduce wear. One piece bonnet construction for easy operation, minimized maintenance. Simple yoke construction with ball bearing operation in large and medium sizes. Flanged or welding ends.

Available in sizes from 2½ in. to 12 in. inclusive for 300 to 1500 lb service. For complete information write for

free CATALOG 12-E



When inquiring check CP 2334 on handy form, pgs. 2-3

DECEMBER, 1950

PROCESSING EQUIPMENT

to remain a safe distance from liquid while he is tilting.

Safety air vent pouring spout is made of acid resistant rubber and plastic tubing. Flow capacity is 5 gallons per minute.

Source: Development of the General Scientific Equipment Co., Dept. CP, 2700 W. Huntingdon St., Philadelphia 32, Pa. . . or for more information check CP 2335 on handy form, pages 2 and 3.

Restore ¼ to 1" threads with tool having swing of only 2-5/16" . . .

takes care of both ASME & SAE standard threads

Uses: Especially suited for reconditioning closely spaced studs and bolts that are battered, distorted or rusted.

Features: With a swing of only 2-5/16", this device works readily in close quarters on cylinder heads of automotive, diesel, and steam engines; wheel lugs; spring hangers; pipe; and shafts.

Description: Adjustable cutting jaws can be fitted by a simple twist of

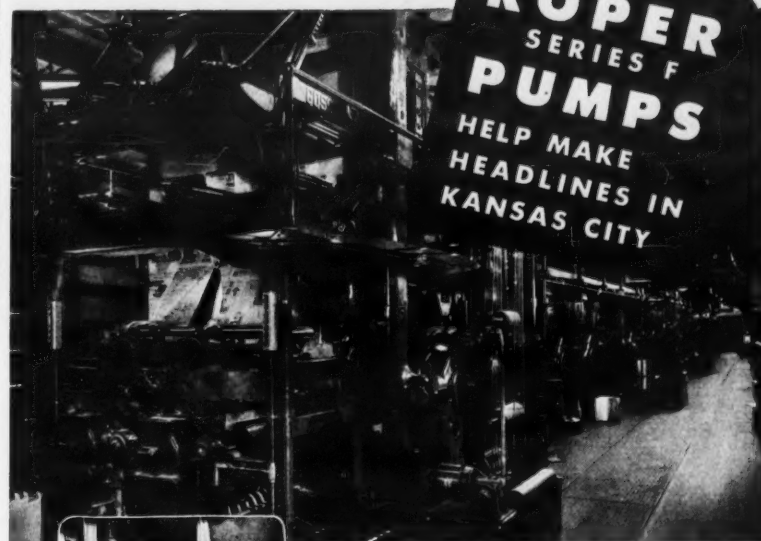


Thread restorer for close quarters

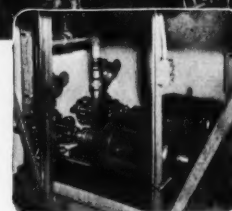
the handle to any male thread of ¼ to 1" root diameter, either right or left handed. Jaws may be engaged at bottom of threaded section, and turned outward toward the top, leaving clean end threads in which nuts may be started and run down easily.

Unit is compact, easily carried in tool kit. No die sets are required for interchange for size or type of thread. Tool's weight is 1-¼ lb.

Source: Buckingham Mfg. Co., Inc., Dept. CP, Binghamton, N. Y. . . or for more information check CP 2336 on handy form, pages 2 & 3.



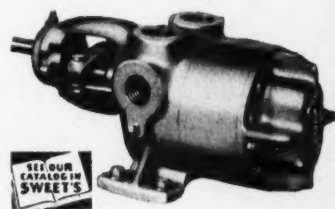
ROPER
SERIES F
PUMPS
HELP MAKE
HEADLINES IN
KANSAS CITY



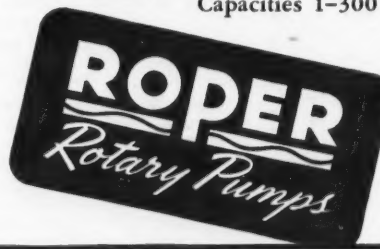
ROPER PUMP FEEDS CONTINUOUS SUPPLY OF INK TO MAMMOTH 16-UNIT NEWSPAPER PRESS OF THE KANSAS CITY STAR

● When this Goss 16-unit newspaper press really gets rolling, over 208,000 editions of the Kansas City Star are printed hourly. This fast-paced operation calls for utmost dependability of all press components . . . there is no room for mechanical failures or delay when the public is hungry for news. So, with dependability foremost, there is small wonder that the Roper Series F Pump is an integral part of this block-long press. And, only one Roper is needed to feed a continuous supply of printer's ink to each of 32 large ink fountains.

● Roper Series F Pumps serve equally well in other applications where clean liquids are pumped. This series features 4-port design (eight optional piping arrangements) which reduces installation cost and time. Helical pumping gears run smoothly in axial hydraulic balance . . . pumping members are self-lubricated by liquid being pumped. Pumps are furnished with or without relief valve . . . with or without mechanical seal.



● Whether you specialize in printing headlines, or if you want a "headliner" for your pumping application, select the Roper Series F. Capacities 1-300 G.P.M.; pressures to 300 P.S.I.



Send For Literature Today

GEO. D. ROPER CORP.
752 Blackhawk Park Ave.
ROCKFORD, ILLINOIS

When inquiring check CP 2337 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

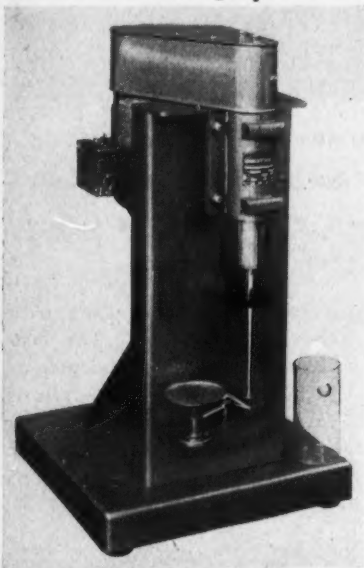
Stability of latices tested with high speed stirrer . . .

samples easily taken from Pyrex test jar

Uses: Provides a standard apparatus for determining the mechanical stability of concentrated natural latices, using high speed stirring.

Features: Test jar is of Pyrex glass with flat bottom, ground top, and a side hole for sampling purposes. A holder is provided for convenient insertion of the jar.

Description: Apparatus consists of a vertical-shaft high-speed stirrer



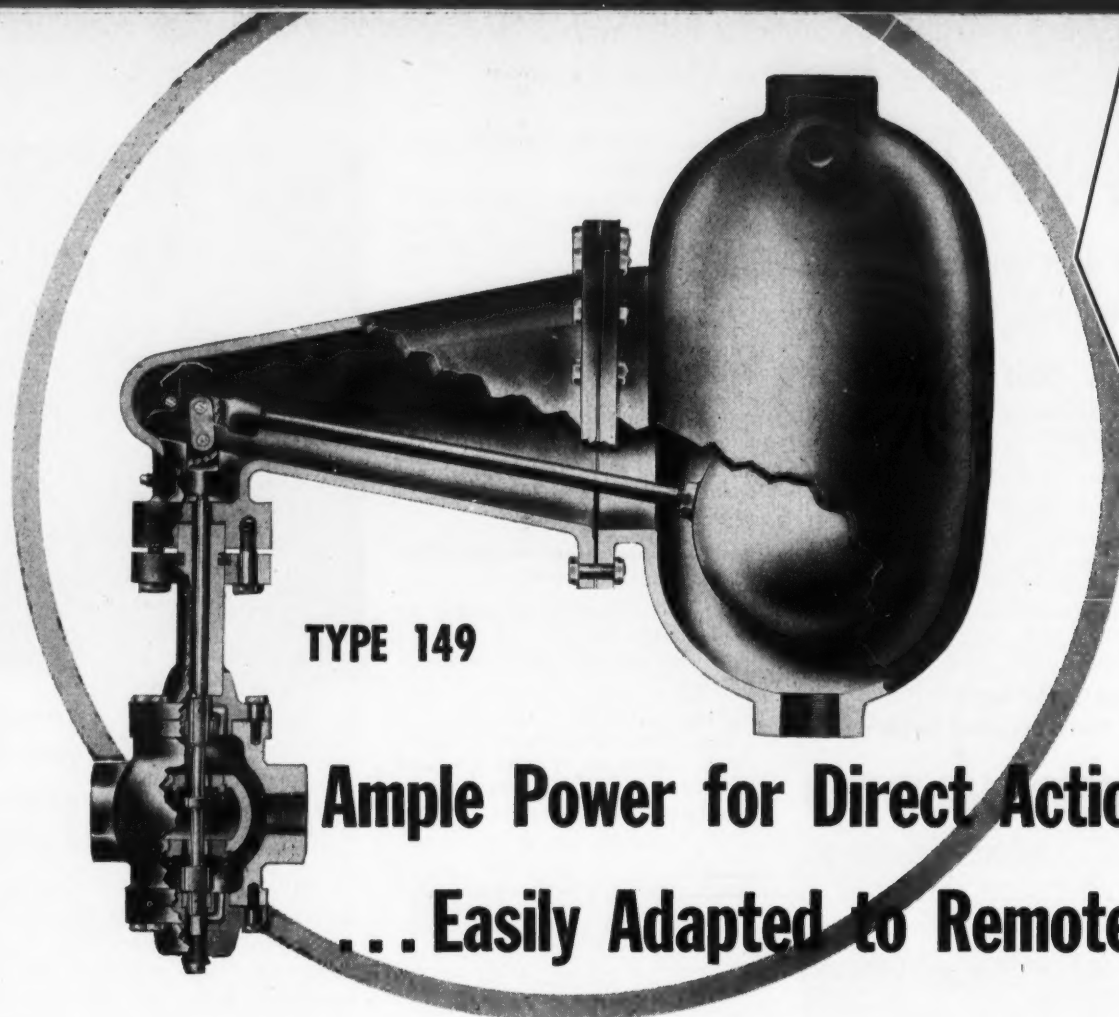
Test stirrer runs at 14,000 rpm

capable of maintaining a speed of 14,000 rpm for the duration of test.

Agitator consists of a highly polished stainless steel disc equipped with a threaded stud for attaching to the spindle shaft. Spindle is driven by a $\frac{1}{2}$ hp, 3,450 rpm induction motor carefully balanced and aligned to hold vibration to a minimum. Drive system between motor and spindle is sturdily built on a steel frame and finished in green hammerloid. Designed in cooperation with Firestone Tire & Rubber Co. and ASTM Committee VII.

Source: Mechanical stability latex test apparatus is offered by Precision Scientific Co., Dept. CP, 3737 West Cortland St., Chicago 47, Ill. . . or for more information check CP 2338 on handy form, pages 2 and 3.

For more information on product at right, specify CP 2339 . . . see information request blank between pages 2-3. ➡



TYPE 149

Ample Power for Direct Action

... Easily Adapted to Remote Control

For Quick Solutions of Tough Problems, Count on *Climax!*



You'll be amazed at the ease with which a BS&B Controls Engineer can end your control worries. Strategically located, he is always ready to give you complete, understanding service . . . in strict confidence. Check the coupon below for the BS&B Controls Man nearest you.

You have a leverage ratio of 18 to 1 forming the connection between float and inner valve plug in the valve body of the BS&B-Climax 149 Feed Water Regulator. This means ample power to operate against differentials across the valve as usually encountered. Designed to serve as Feed Water Regulator or as Liquid Level Control. Combines the economy with the proved efficiency of Climax top-and-bottom-guided, reversible valve bodies.

Employ the type 149 float cage for direct control of level, remote of valves or instruments through air pilots, and operation of alarm systems or signals through Mercoid switches. Yes, sir . . . you can't beat this BS&B-Climax Control for versatility!

Sales Promotion Dept.

BLACK, SIVALLS & BRYSON, INC.
Climax Controls Division, Section C1-4-12
7500 E. 12th St. Kansas City, Mo.

Send complete information on following items, as checked: ☐ Type 149 Feed Water Regulator ☐ Type 320 Pressure Reducing Regulator ☐ Type 86 Diaphragm Valves ☐ Type 850 Displacement Liquid Level Controllers
☐ Have Sales Engineer call. Also send name of nearest BS&B Controls Man.

NAME _____

TITLE _____

COMPANY _____

STREET _____

CITY _____

STATE _____

Models available . . . in high tensile cast iron for pressures up to 250 psi, cast steel for up to 500 psi.

Complete description, diagrams, specifications and applications are ready for you. Mail the coupon . . . today!

Climax Controls Division

BLACK, SIVALLS & BRYSON, INC.

KANSAS CITY • OKLAHOMA CITY • TULSA

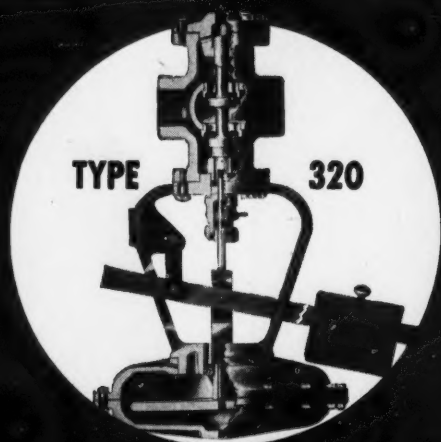
Efficiency at a Real Saving

BS&B Climax

NEW WATER REGULATOR

PRESSURE REDUCTION OR BACK PRESSURE REGULATOR

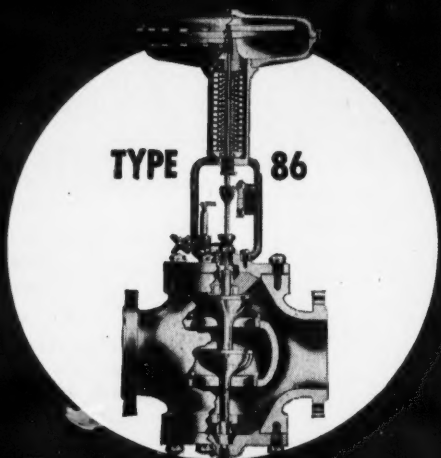
Type 320 Regulators allow sensitive pressure control in vapor vacuum and low pressure steam heating systems. Weight loaded, pressure operated, diaphragm actuated. Built for long life under rugged conditions.



TYPE 320

DIAPHRAGM CONTROL VALVE

Type 86... famous the world over for high lift, accurate control, ease of maintenance. Fully reversible in the field. Super polished lower stem for minimum friction. Wide rangeability. Check coupon for catalog.



TYPE 86

DISPLACEMENT LIQUID LEVEL CONTROLLERS

No leakage... no stuffing box... no friction problem! That's the Type 850, a BS&B Climax developed exclusive. Ideal wherever liquid level control involves exacting and wide range control. Shown here with Type 1410 BS&B Climax Control Pilot. Complete catalog available... send coupon now.



Patent No. 2,263,771

TYPE 850

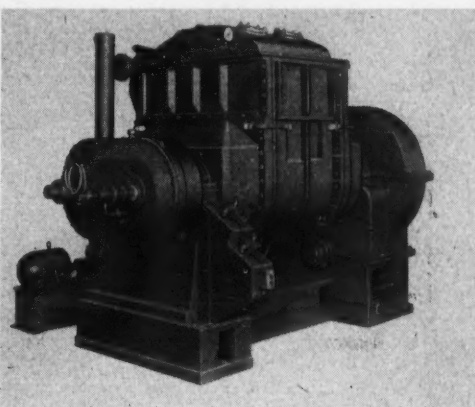
PROCESSING EQUIPMENT

Increases heat transfer area of color flusher 40% with mixing blade unit...

cored design of blades affords even circulation of heating medium; shortens flushing cycles

Uses: Maker's specially designed Kneader-master for color flushing.

Features: Mixer is equipped with mixing blades that flush to a high pigment concentration, leaving little moisture to be removed under vacuum. Blades increase the available heat-transfer area in mixer by as much as 40% through their cored design. Even circulation of the heat-



Shorter flushing cycles with improved blade unit of Kneader-master

ing medium through the blades, as well as through the trough and trough heads, is assured by use of this apparatus.

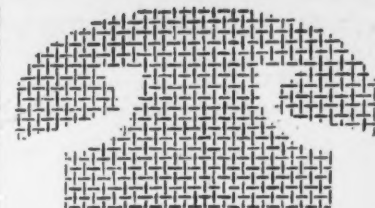
Description: Kneader-master now incorporates recently developed Dispersion Blade Unit for color flushing. After batches of filter press cakes have been mixed and initial water removed, they can then be finish-dried under vacuum and elevated temperatures. Ability to heat batches evenly and quickly during this latter operation contributes to shorter flushing cycles.

Trouble-free flushing is afforded by stuffing box arrangement. Vacuum is maintained and shaft erosion is eliminated by multiple ring packing, lantern glands with forced lubrication, and spring-loaded followers.

Source: Product of The Patterson Foundry & Machine Company, Dept. CP, East Liverpool, O. . . . or for more information check CP 2340 on handy form, pages 2 and 3.

Automatic combustion control offered in steam generators

Boilers described in 8-page bulletin are readily adaptable to automatic combustion control. Firing is by any of several different systems: underfeed or spreader stoker, or oil or gas burner. All tubes are independent of each other, can be individually replaced when necessary. Complete with dimensions, illustrations, and specifications, Bulletin 49-1 is issued by The Wickes Boiler Co., Dept. CP, Saginaw, Mich. When inquiring specify CP 2341 on handy form, pages 2 and 3.



*Cambridge
for all
Industrial Wire
Cloth or Screen
from 4" opening
to 20 x 250
mesh...*

... any metal or alloy in any gauge, mesh and weave that will give you the best performance in your filtering or screening operations or for fabricating purposes. Cambridge offers you one-source buying simplicity on all your wire screen or metal cloth requirements.

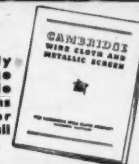
Your Cambridge Field Engineer is an experienced and fully qualified consultant, ready to help you solve any industrial wire cloth problems. He is backed by large stocks of standard materials, skilled craftsmen and modern facilities for fast service on highest quality specially woven items.

CONSULT YOUR CAMBRIDGE MAN OFTEN



Thousands of items in stock ready for prompt shipment to you.

VALUABLE BOOK FREE! A ready reference on the Cambridge line, metallurgy and simple methods of metal determinations conversion tables and other data. Write for your copy or call your nearest Cambridge office.



Cambridge Wire Cloth Co.
Dept. F • Cambridge 12, Md.

trays • crates • screens
baskets • fixtures

OFFICES IN PRINCIPAL INDUSTRIAL CITIES
See "Wire Cloth" in your Classified Telephone Directory.

When inquiring check CP 2342 on handy form, pgs. 2-3

Nobody told him he couldn't weld ALUMINUM

So he's welded 37 aluminum rings—7 feet in diameter—into this low-pressure oxygen plant, bubble cap tower of Alcoa Aluminum. And very nicely, too. Welding aluminum is no harder than welding other metals. Just follow recommended, simple procedures and you'll have smooth, tight joints every time. Gas, arc, resistance . . . aluminum takes them all.

But ease of welding is only one of the reasons you'll want aluminum for sub-zero

process equipment. It costs 25 to 50% less than other suitable metals. Alcoa Aluminum gets stronger and tougher as temperatures drop. Shows no signs of embrittlement at temperatures down to -320°F and lower. Use of aluminum speeds fabrication, reduces maintenance and increases the efficiency of exchangers and expanders.

For more information, mail the coupon below to: ALUMINUM COMPANY OF AMERICA, 1475M Gulf Building, Pittsburgh 19, Penna.

Gentlemen:

Please send more information on aluminum's properties and applications for sub-zero process equipment.

Name

Title

Company

Address

City State

ALCOA

ALUMINUM

When inquiring check CP 2343 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Spring sets pressure of muller wheels to suit job . . .

range of 100 to 275 lb provides correct muller weight for specific materials

Uses: Mobile muller for mixing all types of dry or damp materials.

Features: Spring adjustment pre-loads muller wheels within range of 100 to 275 lb, providing correct muller weight for specific materials.

Description: Mobile muller rolls on standard 6x16 implement tires and wheels. Its capacity is from 250 to



Discharging muller through release door

300 lb. Power is supplied by 3 hp, 1800 rpm motor, interchangeable with any NEMA frame motor, and connected to mulling mechanism by V-belt.

Source: Porto-Muller is made by Simpson Mix-Muller Div. of National Engineering Co., Dept. CP, Machinery Hall Bldg., 549 W. Washington Blvd., Chicago 6, Ill. . . . or for more information check CP 2344 on handy form, pages 2 and 3.

Eight lines from 1 source by using outlet box . . .

incorporated fuses prevent damage from overloads

Uses: Portable power outlet box for plugging 8 standard cord plugs into 1 source.

Features: Two fuses and extractors are built into box, preventing line damage from overloads, and short circuits from traveling to main fuse box.

Description: Double-pole, single-throw toggle switch turns off both legs of all 8 receptacles. Neon pilot light indicates power flowing through switch. A 12' rubber-covered cord terminated in unbreakable plug provides for placing box in most convenient location.

Source: Power outlet box is made by Sun Radio & Electronics Co., Dept. CP, 122-124 Duane St., New York, N. Y. . . . or for more information check CP 2345 on handy form, pages 2 and 3.

For pumping acids, caustics, slurries,
viscous liquids, specify...

JABSCO

Corrosion Resistant

PUMPS

Patented
and Pats.
Pend.



SELF PRIMING. Obtains vacuum in excess of 26".

VERSATILE. Handles variety of liquids and slurries at wide range of speeds.

SAFE. Self-priming feature permits cleaner, safer, more accessible installations.

SIMPLE. Easily and quickly disassembled for cleaning.

TROUBLE FREE. Impeller lubricated by liquid pumped. No oil or grease cups. No packing. No metal to metal contact of moving parts. Ball Bearings.

MORE CAPACITY for its size and price than any other type of pump. Capacities up to 56 GPM.

FLEXIBLE IMPELLER. Odorless, tasteless, non-toxic corrosion resistant neoprene—also gum rubber if specified.

Stainless Steel Molds available in 3/4", 1", 1 1/2" port sizes.
Bronze Models available in 1/4" up to 1 1/4" port sizes.
Cast Iron Models available in 1", 1 1/4" port sizes.

JABSCO PUMP COMPANY

2031 LINCOLN STREET • BURBANK, CALIFORNIA

When inquiring check CP 2346 on handy form, pgs. 2-3

IF YOU USE PROCESS STEAM—

1. YOU CAN KEEP YOUR PROCESS EQUIPMENT OPERATING AT HIGH, UNIFORM TEMPERATURES.
2. YOU CAN SAVE AT LEAST 10% ON FUEL.
3. YOU CAN REDUCE DRYING TIME.
4. YOU CAN DRAIN CONDENSATE COMPLETELY FREE OF ENTRAINED AIR AND RETURN IT TO THE BOILER AT PRACTICALLY THE SAME TEMPERATURE AS WHEN IT LEFT.
5. NO PIPE CHANGES REQUIRED — other than connections into existing closed circuit.
6. NO GADGETS TO ADJUST OR CAUSE DELAY.
7. COMPLETELY AUTOMATIC IN OPERATION OVER ENTIRE PRODUCTION RANGE — from start up to and during full speed.

A 24 page book — Publication 3250 — will be of value to you in your steam process problems. Write for it today.

COCHRANE CORP., 3162 N. 17th St., Phila. 32, Pa.

COCHRANE

GB

SYSTEM OF
CONDENSATE
DRAINAGE
CONTROL

When inquiring check CP 2347 on handy form, pgs. 2-3

DECEMBER, 1950

PROCESSING EQUIPMENT

U. S. Bureau of Mines OK's
Class C respirator for
toxic dust, fumes . . .

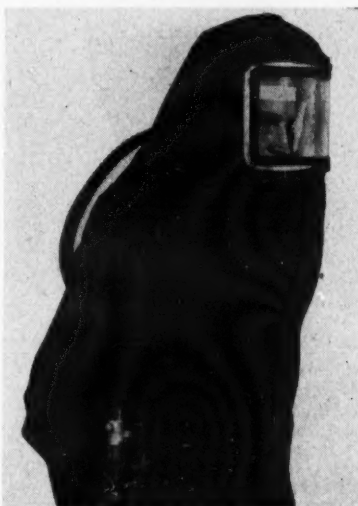
rubberized hood offers complete
protection to head, face, torso

Uses: Hood and respirator combination for lead discing and other grinding, light sand blasting, paint spraying, and similar operations. Approved by U. S. Bureau of Mines as Class C respirator for use in toxic dust and fumes.

Features: Incoming air is introduced "almost noiselessly" through tubes to each side of wearer's face. It is diffused and filtered through cloth bags so that a constant supply of clean, fresh air is maintained directly in respiratory zone.

Further protection is given by soft cotton bib which acts as baffle to keep out dust. Bib zips out for cleaning.

Description: Hood is made of light weight, flexible rubberized fabric. It is adjustable, provides comfort and



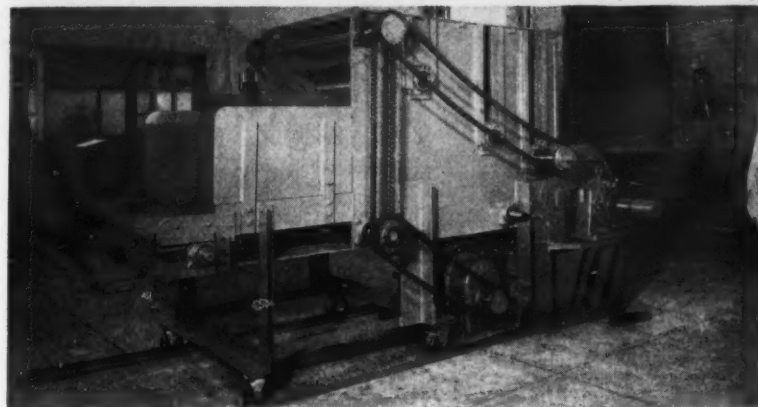
Air-fed hood protects wearer from
chips and toxic dusts

full freedom of movement, and gives head, shoulders, chest, and back complete protection against flying particles. It is also waterproof and acid-resistant.

Vision is provided by large, clear plastic window allowing wide-angle view. It is mounted in sponge rubber, withstands abrasion and impact. Unit is provided with adjustable plastic headband mounted to hood on friction swivel which allows full vision up or down as wearer moves his head.

Source: No. 600 air-fed hood is product of Chicago Eye Shield Co., Dept. CP, 2300 Warren Blvd., Chicago 12, Ill. . . . or for more information check CP 2348 on handy form, pages 2 and 3.

For Better, Faster Straw Cutting



SHORTENS DIGESTING TIME IN MAKING PAPER FROM STRAW

The illustration shows only the cutting unit of a combination bale breaker and straw cutter developed under government auspices to stimulate the use of straw in paper making.

The combination equipment opens the bales and cuts the straw in a single continuous operation at 1,000 pounds per minute.

For full particulars write or wire

TAYLOR, STILES & COMPANY

20 Bridge Street

Riegelsville, N. J.

When inquiring check CP 2349 on handy form, pgs. 2-3



This PROPANE TRUCK TANK . . .

. . . is 54" I.D. x 87 1/4" T.L., fabricated for 250# W.P., stress relieved; automatically welded. Welds checked with X-RAY . . . A.212 Steel used in fabrication. This Tank mounted on customer's chassis by DOWNTOWN.

DOWNTOWN Engineers and Technicians have given considerable study to many factors and processes of Plate Fabrication. Consequently, we have arrived at conclusions which we firmly believe assure a quality job.

Your inquiries for pressure vessels of Nickel Clad, Stainless, Stainless Clad, Carbon Steel, are solicited. Another important factor of our business is the design and fabrication of Heat Exchanger Equipment.



NEW YORK OFFICE: 30 CHURCH STREET

DOWNTOWN IRON WORKS
DOWNTOWN, PA.
WELDED and RIVETED PRODUCTS

When inquiring check CP 2350 on handy form, pgs. 2-3

NEWSCAST

TECHNICAL INFORMATION

ON

Corrosion Resistant VALVES • FITTINGS CASTINGS • ALLOYS

- A CATALOG** — New 48 page catalog giving full design, with drawings on the complete line of Cooper Alloy Stainless Valves, Fittings and Accessories.
- B NAMES OF VALVE PARTS** — Design drawings identifying parts and the materials from which they are made.
- C COMPARISON CHART** — 2" & 3/4" GATE VALVES — Detailed engineering chart comparing features of leading competitive valves.
- D MSS STANDARDS** — Standard Practice SP-42 gives specifications for 150 lb. corrosion resistant cast Flanged Valves, Flanges and Flanged Fittings.
- E FLOW DIAGRAMS** — Basic discussion of valve types — gate, globe, angle, Y, check and tank — with a complete set of diagrammatic sketches to illustrate direction of flow.
- F THREADING STAINLESS STEEL** — Suggested methods of Threading and Assembling Stainless Steel Pipe and Pipe fittings are presented.
- G 1950 REFERENCE CHART** — Comprehensive analysis of stainless, corrosion and heat resistant alloy castings — properties, comparative designations, alloy types and nominal analyses.
- H CASTING CENTRIFUGALLY IN PERMANENT METAL MOLDS** — The process and the foundry techniques developed to produce stainless jet engine ring components are thoroughly discussed.
- I CORROSION RESISTANCE OF HIGH ALLOYS** — Technical data sheet on corrosion resistance of stainless, monel and nickel castings.

Yours for the asking!
Just circle letter you want!

A B C D E F G H I

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ STATE _____ ZONE _____

The COOPER ALLOY FOUNDRY CO.
HILLSIDE 5, NEW JERSEY

When inquiring check CP 2351 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Photomicrographic camera backs rotate 360° . . .

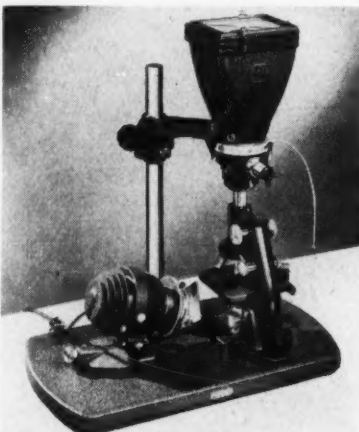
35 mm and 4 x 5" models available

Uses: These 4 x 5" cameras are made for laboratory and clinical service. Especially designed to simplify job of photographer. Light-tight adapter permits photographer to swing camera over or away from the microscope without the need of raising or lowering camera body or disturbing focus of microscope.

Features: Unique revolving body permits 360° rotation of the camera backs. This eliminates the need for a microscope with circular revolving stage.

Description: These cameras replace a line discontinued during World War II. Critically sharp focusing is obtainable with a telescopic focusing eyepiece equipped with a cross-hair reticle.

Image may be viewed in the telescope



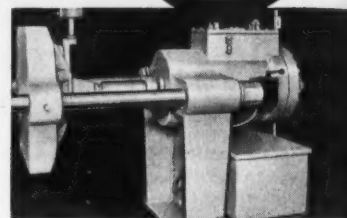
Photomicrographic camera

up to the moment when shutter is released. The 4 x 5" ground glass has diagonal transparent strips across the field which enables a magnifier to be used to check the quality of the image when super critical focusing over the entire plate arm is essential.

Three models are offered: 4 x 5" camera with Universal shutter and telescopic focusing eyepiece; 35 mm film camera with Universal shutter and telescopic focusing eyepiece; and 4 x 5" camera with Alphax shutter. The 35 mm camera is interchangeable with the 4 x 5" body and is equipped with a compensating lens to accommodate for the difference in focal length between the two bodies. Holders are available for 4 x 5" plates, films, or film packs. Reducing adapters are available for 3-1/4 x 4" or 3-1/4 x 4-1/4" film and for 3-1/4 x 4" plates.

EHC

**... MEANS
FASTER
OPERATION
OF YOUR
FILTER PRESS**



Factory-installed on your new Sperry Filter Press or field-installed on your existing equipment of any make, the EHC closing device will speed your filter press operation. The EHC closing device provides simple, positive operation with minimum effort. An oil hydraulic medium, electrically powered, supplies the force required to close the press. Occupational hazards are reduced, filter media wear is minimized and your filtering operation speeded. Write for details today!

D. R. SPERRY & CO., BATAVIA, ILL.

Filtration Engineers for Over 50 Years

Eastern Sales Representative:

H. E. Jacoby, M. E.
205 E. 42nd St.,
New York 17
Phone:
Murray Hill
4-3581

Western Sales Representative:

SPERRY
FILTER PRESSES
B. M. Piliashy
833 Merchants
Exchange Bldg.
San Francisco 4,
Calif.
Phone: DO 2-0375

When inquiring check CP 2352 on handy form, pgs. 2-3

STUFFING BOX ABOVE THE FLUID BEING HANDLED



FIG. 19,447



Repacking interruptions are reduced to an inconsiderable minimum . . . by locating the stuffing box away from fluid being handled. Liberal size bearings and oversize shafts retard vibration and extend the useful life of these Taber Vertical Pumps.

Oil, concentrated sulphuric, mixed acids and similar liquids, are well within the handling range of Taber Vertical Pumps. Pump can be furnished in all grades of nickel chrome alloys, iron, bronze or carbon steel . . . whichever customer has found most suitable.

Write for Complete BULLETIN V-837

Please use your business stationery. Taber Pump Co.
Est. 1859 320 Elm St., Buffalo 3, N. Y.

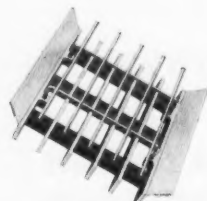
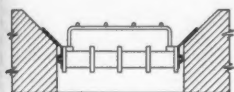
TABER HIGHER PRACTICAL PERFORMANCE PUMPS

When inquiring check CP 2353 on handy form, pgs. 2-3

CHEMICAL PROCESSING

THE IRONY OF THE MAGNETIC GRATE

Bauer



A permanently magnetized grate is such an obvious thing that we should have thought of it years ago. But we didn't; and that's the irony of it. A customer gave us the idea!

When flowable materials are poured or dumped or shoveled through the Magnetic Grate, iron and steel inclusions simply can't get by. What's more, the grate catches large debris such as strings, rags, paper, and sticks.

Installation consists merely of laying the Magnetic Grate on a frame in a hopper or floor opening as shown in the drawing. The size may be anywhere from 2' x 4' to as many feet wide and long as desired.

Ask for Bulletin M-3-A which describes all Bauer Permanent Magnetic Separators. Write, phone, or wire us while you're thinking of it.

THE BAUER BROTHERS CO.

1728 SHERIDAN AVE. • SPRINGFIELD, OHIO

When inquiring check CP 2354 on handy form, pgs. 2-3

Cut glove costs 60%-65% and solved lost-time problem

CASE NO. 147

Problem: High injury rate and glove replacement expense due to tearing of heavy unlined rubber gloves, which exposed workers' hands to plating acids and sharp metal edges.

Solution: Redmont 14" gauntlets, of NEOX (specially reinforced neoprene) over fabric base, gave maximum protection from snagging and biggest cost saving. (Cost only half as much as gloves previously used and gave much longer service.)



Reduce costs, improve safety and increase production with the correct gloves for your operation

Free Test Offer: Send brief description (on business letterhead) of operation, materials handled, temperature conditions. Without cost we will supply samples of type glove we recommend, plus helpful test data. Address

Edmont Mfg Co., 501 Orange St.
Coshocton, Ohio

World's largest maker of coated industrial gloves—
NEOX, natural rubber and plastic



Edmont
COATED FABRIC
GLOVES

PROCESSING EQUIPMENT

For the convenience of the photographer, four positioning clamps are provided on the base plate. One pair may be used in any one of three positions for the location of the microscope in the most accessible position.

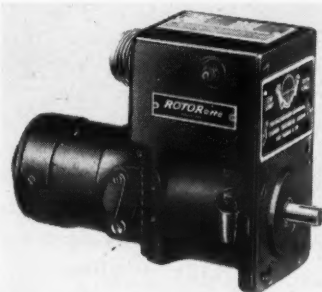
Source: Series AO Spencer 35 mm and 4 x 5" photomicrograph cameras are made by American Optical Co., Dept. CP, Buffalo, N. Y. . . . or for more information check CP 2356 on handy form, pages 2 and 3.

Announces load-sensitive rotary actuator with positive stops . . .

electric unit adaptable to valve opening and closing

Uses: Actuators are adaptable to rotary operations requiring torques not exceeding 50 pound-inches — valve opening and closing is a typical application.

Features: Load-limiting switches are adjustable for any value of torque up to maximum. Motion between



Develops maximum of 50 lb-in
rotary motion

travel limits is controlled by adjustable, positive stops which cause a reaction on the load limit switches.

Description: "ROTORette" electric rotary actuator is offered in two models. Model R-440 is similar to Model R-430, except that provisions are made for a position-indicating potentiometer or intermediate position switch — whichever feature is required.

Both units are designed to meet AN-M-40 requirements, including radio noise and integral brake. Maker reports they are the most compact aircraft-type actuators meeting all AN specifications. They weigh approximately 1 pound.

Source: Product of the Airborne Accessories Corporation, Dept. CP, 25 Montgomery St., Hillside 5, N. J. . . . or for more information check CP 2357 on handy form, pages 2 & 3.

KIRK & BLUM FUME CONTROL SYSTEM

**60% More Air
Less H.P.
Lower Cost**



• Although a conventional duct system would have required as much as 100 H. P., this KIRK & BLUM ductless Fume Removal System uses just 40 H. P. to handle 160,000 cubic feet of air per minute . . . doing an excellent job of fume removal at lower initial cost and lower operating cost.



In this plant a battery of ten 8-foot tanks are ventilated by the fume exhaust system shown. Flexibility of capacity is obtained by operation of one or more fans as production requires. Even when baskets containing the parts are lifted from the tanks, the system easily removes all steam and fumes.

Completely designed, fabricated and installed by KIRK & BLUM, this Fume Control System is another example of engineering skill and experience combined to save money for a long list of America's leading plants. For a comprehensive picture of KIRK & BLUM Fume Control Systems, write today for Booklet, "Dust Collecting Systems for Metal Industries."

THE KIRK & BLUM MANUFACTURING CO.

2833 Spring Grove Ave., Cincinnati 25, Ohio

FOR CLEAN AIR . . . THE INVISIBLE TOOL

KIRK AND BLUM

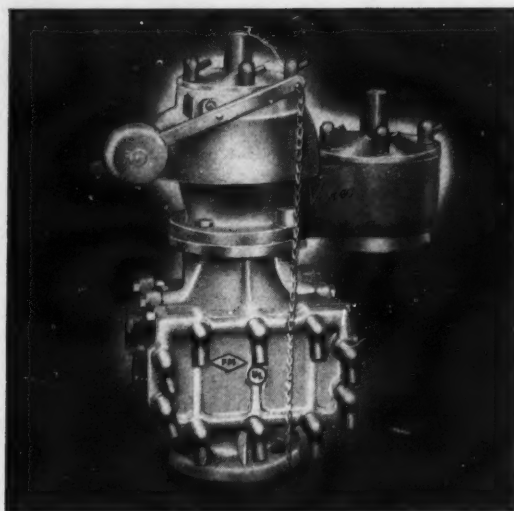
FUME CONTROL SYSTEMS

When inquiring check CP 2358 on handy form, pgs. 2-3

When inquiring check CP 2355 on handy form, pgs. 2-3

DECEMBER, 1950

TANK VENTING ECONOMICS



"VAREC" Figure No. 5800A Conservation Vent Unit—consists of Figure No. 2000A Conservation Vent Valve and Figure No. 50 Flame Arrester

... how much does it flow?

Compare vent valves on a basis of flow and you may find that a smaller valve or even a single valve instead of two has sufficient capacity to do your job. Even if the same size is required, the valve with most flow capacity gives you the greatest tank protection.

With flow capacity so vital in vent valve selection, either the "VAREC" Figure No. 2000 Series Conservation Vent Valves or the "VAREC" Figure No. 5800 Series Vent Units are your most economical buy. The flow path through the Figure No. 2000 Valve is similar to that of a high-gas-velocity turbine nozzle. As a result, this valve, mounted on a nipple, not only flows more than the nipple alone, but flows more than the nipples could theoretically flow alone.

Flow through all vent units is governed by the flame arresters. "VAREC" Figure No. 50 Flame Arresters have largest net free area and permit highest flow with required safety against flame propagation. They are listed by Underwriters' Laboratories and approved by Associated Factory Mutuals Laboratories and other governing agencies.

Certified flow curves are available for all sizes of "VAREC" Vent Valves and Units. Compare these and demand "VAREC" Tank Venting Equipment on your tanks for the best in safety and economy.



CP-18

THE VAPOR RECOVERY SYSTEMS COMPANY

COMPTON, CALIFORNIA, U. S. A.

Cable Address: VAREC COMPTON USA (All Codes)

New York • Boston • Pittsburgh • Chicago • Detroit • St. Louis • Houston
Tulsa • Casper, Wyo. • Provo, Utah • Los Angeles • San Francisco • Seattle

When inquiring check CP 2359 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

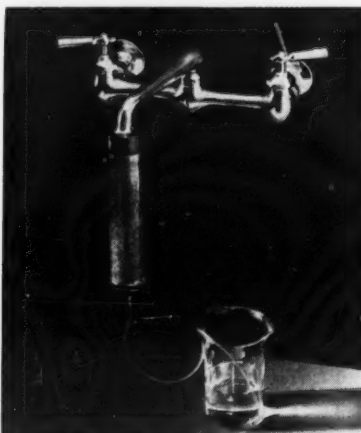
Deionize small amounts of water with miniature ion exchange unit . . .

device attaches to any faucet; is simple to refill

Uses: Deionizing small amounts of water.

Features: Unit is described as being the smallest and lowest-cost application of the monobed ion exchange principle. Although the tube is but $8\frac{1}{2}$ " long and $1\frac{5}{8}$ " in diameter, its chemical action is identical with that of huge monobed water conditioning units used in steam power plants.

Description: Unit is essentially a transparent tube, filled with ion exchange resins, which is slipped over end of a cold water faucet. Small holes in the top prevent excessive flow



Deionizer attaches to faucet

through the bed of resins. Deionized water is delivered through a much smaller plastic tube (see illustration).

As water passes through the apparatus, metallic and other ionic solids are taken out of the solution by the mixture of anion and cation exchangers. Fiberglass filters trap physical impurities.

The unit utilizes Amberlite exchange resins developed by Resinous Products Division of Rohm & Haas Co. Initially blue-black, the bed of resin turns light yellow in a gradually descending line as exhaustion progresses. When the yellow band reaches the bottom, the unit is recharged.

Quantity of deionized water will vary with hardness or mineral content of the raw water. Normally up to 10 gallons of laboratory quality water may be expected from each unit.

Source: Filtr-Ion units are made by La Motte Chemical Products Co., Dept. CP, Baltimore 4, Md. . . . or for more information check CP 2360 on handy form, pages 2 and 3.

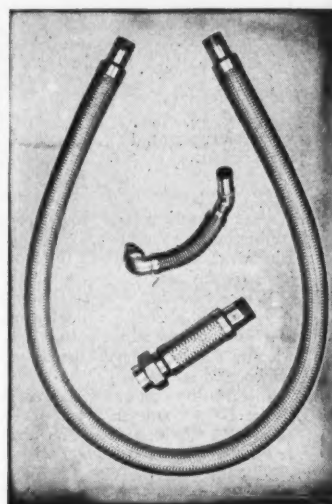
YOUR BEST BUY IS BY



CONVEYOR LINES

FOR CORROSIVE LIQUIDS & GASES

Bendix Seamless Flexible Bronze Metal Hose assures you greater flexibility—longer service life. In addition, it is engineered to your requirements in stainless steel, monel, SAE 1010 carbon steel and other special alloys.



Expert Sales: Bendix International Division, 72 Fifth Avenue, N. Y. 11, N. Y.

MADE BY ECLIPSE-PIONEER DIVISION

Bendix Aviation Corporation • Teterboro, N. J.

When inquiring check CP 2361 on handy form, pgs. 2-3

FABRICATORS AND DESIGNERS OF PROCESS INDUSTRIAL EQUIPMENT

IN SOLID OR CLAD

STAINLESS STEEL

NICKEL • MONEL • INCONEL

AND SOLID

ALUMINUM • HASTELLOY • EVERDUR

TO ASME CODE—U-68, U-69

ALLOY FABRICATORS

DIVISION OF CONTINENTAL COPPER AND STEEL INDUSTRIES, INC.

PERTH AMBOY • NEW JERSEY



When inquiring check CP 2362 on handy form, pgs. 2-3

CHEMICAL PROCESSING

BY

PROCESSING EQUIPMENT

**Established circuit breakers
now available in styles for
individual mounting . . .**

models have previously been manufactured as bare breakers or in metal-enclosed switchgear

Uses: Low voltage air circuit breakers, available for individual mounting.

Features: This is a new form of these models, which have heretofore been available only as bare breakers or in metal-enclosed switchgear.

Description: Breaker and cable connections are completely enclosed in welded sheet-steel housing. Front of housing incorporates hinged panel, ventilating louvers, latch and handle, hasp for locking, and flash barriers. Rear of housing is removable, and includes cover plates with 3, 3-5/8, 4-1/8, and 4-5/8" diam knockouts for cables.

Source: Models G-25 and G-50 circuit breakers are made by Allis-Chalmers Manufacturing Co., Dept. CP, 1181 S. 70th St., Milwaukee, Wis. . . . or for more information check CP 2363 on handy form, pages 2 and 3.

**Ready-to-install generator
delivers 12,075 lb of steam
per hour up to 200 psi . . .**

for light oil, heavy oil, gas, and combination gas and oil operation; automatic safety controls

Uses: For services where requirements call for up to 12,075 lb of steam per hour and for pressures from 15 to 200 psi.

Features: Unit is ready to operate upon arrival, only connections required being water, steam, fuel and electricity. It is fully equipped with integral burner, fully automatic safety and operating controls, steam trim, valves and other equipment necessary to comprise a complete unit. No stack is required; a simple flue vent to conduct exhaust gases outside is sufficient. (Local regulations must be considered, of course.)

Entire surface is insulated with Fiberglas, over which is fitted a metal jacket. This generator's two-pass design and special combustion principle uses refractory only for the lining of burner head, rear cover and furnace extension. Base is structural steel. No foundation or excavation is required.

Description: Generator is horizontal, two-pass construction with centrally located furnace, and return tubes arranged concentrically around the furnace. All high pressure units are stress relieved. All units are built in conformity with the ASME boiler code.

Burner equipment embodies blower which is forced draft and connected directly to blower motor, stainless ignition electrode which is heat resistant and mounted on gas pilot nozzle, and ignition transformer which supplies 5,000 volts to gas pilot. Unit may be equipped with any one of five different burner arrangements.

Control panel is housed in a metal drip-proof cabinet and mounted near the front of the unit. Pressure control, actuated by steam pressure, will stop the burner at any desired pressure setting and will restart the burner at lower pressure setting.

In addition to this model, another unit of larger capacity, 13,800 lb steam per hour, is also available.

Source: Cyclotherm steam generators are built by Cyclotherm Corp., Dept. CP, Oswego, N. Y. . . . or for more information check CP 2364 on handy form, pages 2 and 3.

TF

**...easier and better
the WeldELL way**

For the *practical* facts about pipe welding fittings go to the *practical* men...the welding foreman; the pipe fitter foreman; the construction superintendent... who have used all kinds and know the field.

They will tell you that the job moves faster and costs stay down when WeldELLS and other Taylor Forge fittings are used

...because of the precision quarter markings, the sized end tangents, the accurate machine tool bevels and lands.

They will tell you that the job maintains momentum easier, smoother

...because of the completeness of the line and better identification markings.

They can tell you...at least, design men will...that the *finished* job is better

...because it is done with fittings that are engineered down to the last detail to meet all requirements of *every* job.

Yes, "WeldELLS have everything"...to make it *easier* ...*better*. Coupon brings lots of facts.

TAYLOR FORGE

TAYLOR FORGE & PIPE WORKS • General Offices & Works: Chicago 90, Ill. (P.O. Box 485). Eastern Plant: Carnegie, Pa. Western Plant: Fontana, Calif. District Offices: New York: 50 Church Street. Philadelphia: Broad Street Station Bldg. Pittsburgh: First National Bank Bldg. Chicago District Sales: 208 S. LaSalle Street. Houston: City National Bank Bldg. Los Angeles: Subway Terminal Bldg.

Please send a copy of your welding fittings
and forged steel flange catalog 484

Name _____

Position _____

Company _____

Street Address _____

City _____ Zone _____ State _____

Mail to Taylor Forge & Pipe Works
P.O. Box 485, Chicago 90, Ill.

515-1250

When inquiring check CP 2365 on handy form, pgs. 2-3

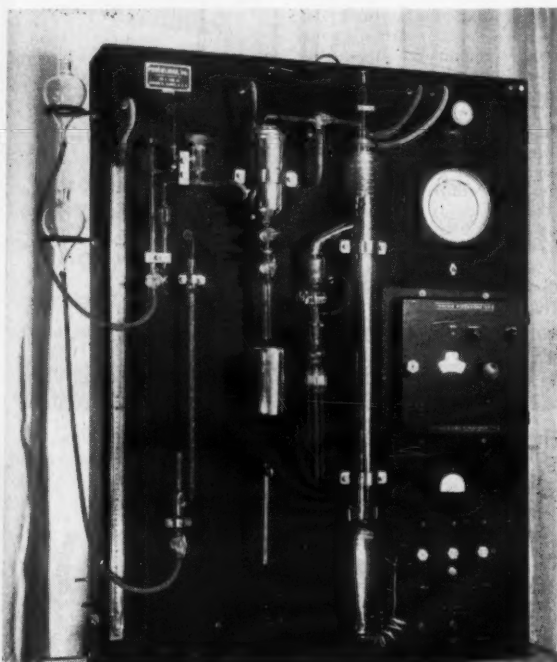
PROCESSING EQUIPMENT

Announces compact panel unit for analysis of lab samples by fractional distillation . . .

sharp separations of samples as small as 2cc take few hours, distilling capacities up to 250cc/hr attained

Uses: Laboratory distilling apparatus for fractional distillation analysis of gasolines, light oils, fatty acids, and numerous other organic and inorganic chemicals. Temperature range: minus 40 to plus 300°C. . . pressure range: atmospheric to 2mm Hg absolute. . . sample range: 2 to 200cc or larger.

Features: All instrumentation and controls are conveniently built into a compact panel assembly. Such auto-



Miniature Hyper-Cal laboratory distilling apparatus

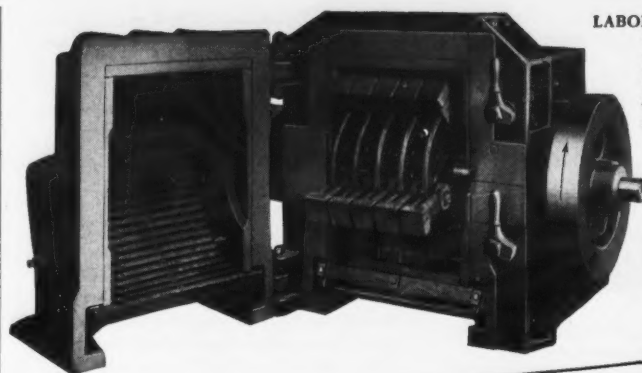
matic features as control of reflux ratio, distillate take-off rate, and distillation pressure afford accuracy and ease of operation.

Combination of high distilling capacity and plates vs holdup permits sharp separations of samples as small as 2cc in only a few hours distillation time. Distilling capacities as high as 250cc/hr may be attained, making distillation of samples in quantities up to 200 cubic centimeters or more practical.

Description: Apparatus is known as the Miniature Hyper-Cal. Column has low heat loss, multiple metal reflector type vacuum jacket, and integral, low-holdup distillate take-off head. It is available with a variety of packed sections. Column is supplied with a 100 plate Heli-Grid packing for most applications.

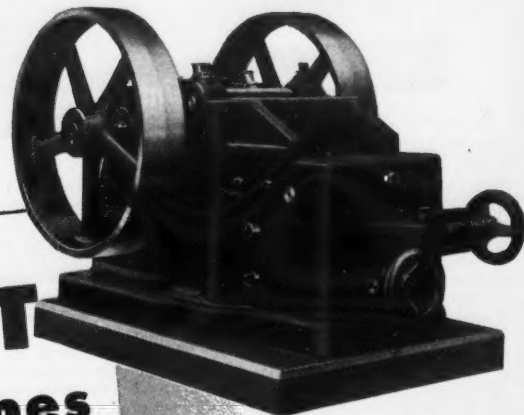
Potentiometer of special range is incorporated in the unit for accurate determination of distillate temperatures. Low holdup receiver changer and precision receiving burets (suitable for either vacuum or atmospheric distillation) are supplied with the assembly.

Source: Development of Podbielniak, Inc., Dept. CP, 341 E. Ohio St., Chicago 11, Ill. . . or for more information check CP 2371 on handy form, pages 2 and 3.



LABORATORY SWING-SLEDGE MILLS

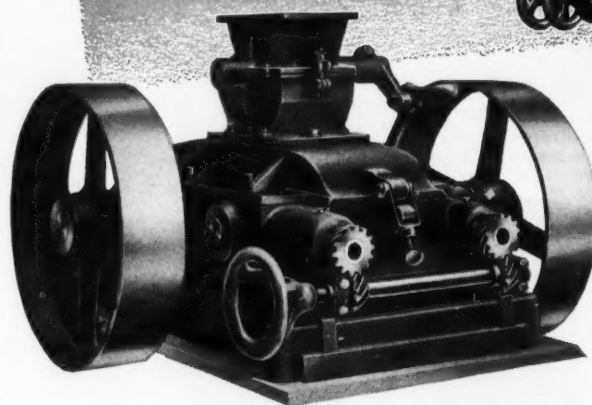
Capable of reducing soft, moderately hard and tough or fibrous materials to any degree of fineness between 1 in. and 20 mesh. The patented "Open-Door" feature permits ready accessibility for cleaning.



LABORATORY JAW CRUSHERS

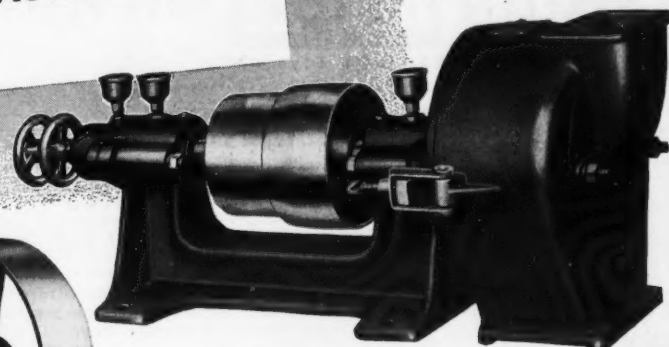
Special Roll Jaw action simplifies close regulation of the product with capacities varying from 300 or 400 lbs. per hour at finest settings, to 1000 or 2000 lbs. when opened for coarser work. Each part of the crusher is accessible for quick and easy cleaning.

STURTEVANT Laboratory Machines Assure Quality of Products Fast - Economical - Accurate



LABORATORY CRUSHING ROLLS

First designed especially for laboratory sampling work. Sturtevant Crushing Rolls are used regularly in many plants where there are limited outputs. Range of output for the 8 x 5 size is from 1/2 in. to 20 mesh — and for the 12 x 12 size from 3/4 in. to 20 mesh.



LABORATORY SAMPLE GRINDER

Laboratory Sample Grinders are of the "Open-Door" disc type and are capable of very fine work, producing products as fine as 100 mesh (coarser if desired) when working on dry, friable, soft or moderately hard materials. Simply turn hand wheel to provide product regulation from 10 to 100 mesh.

The only sure way to maintain strict quality of products is laboratory control . . . and that calls for accurate sampling.

Sturtevant Laboratory Equipment meets the exacting requirements of laboratory work. They are fast and accurate . . . provide true samples.

Rugged and dependable, Sturtevant equipment actually has all the features

of full size machines plus extra accuracy and wider range of adjustment. The "Open-Door" accessibility permits quick, thorough cleaning . . . prevents the possibility of previous batches from contaminating new samples.

Investigate Sturtevant equipment for your laboratory. It will cut your sampling costs . . . help maintain strict quality of products . . . increase sales. Write for complete details and catalog.

STURTEVANT MILL COMPANY

119 CLAYTON STREET, BOSTON 22, MASS.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 2372 on handy form, pgs. 2-3

A New Formula for

Snowballing

Production Savings into Increased Profits!

OTHERS ARE DOING IT right now! Saving money through tank car purchases of BAKELITE BCU-22 liquid urea resin—currently 1¼¢ per pound lower in cost than the price per pound delivered in drums.

The savings quickly pay for storage tanks and distribution pipes at your plant. From there on in, savings become clear profits!

Outstanding companies like Drexel Furniture, U.S. Plywood, Johnson-Carper, American Furniture, Darlington Veneer are already benefiting through tank-car purchase and bulk handling of BCU-22 for their top-quality furniture and plywood. And

this excellent chemical intermediate is being evaluated by other industries, too, for paper sizing, cloth treating, fortifying starch adhesive for paper-board and corrugated containers, and bonding wood waste.

You, too, may have a job for BCU-22 that can help improve your product, lower its cost, and snowball your profits! Write us for further details. And by all means let us tell you how a \$3,000 (plus labor) storage and distribution system to handle, for example, 60,000 pounds a month can pay for itself in four months—and return 300% on your investment the first year! Write Dept. AZ-35

BAKELITE BCU-22 UREA RESIN

TRADE-MARK

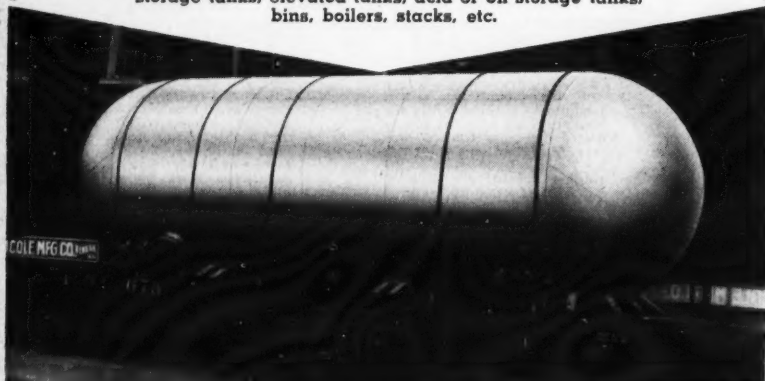
BAKELITE DIVISION

Union Carbide and Carbon Corporation **UCC** 30 East 42nd St., New York 17, N. Y.

When inquiring check CP 2373 on handy form, pgs. 2-3

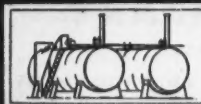
COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.8% pure aluminum for hydrogen peroxide from 5000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.

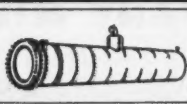
NEWNAN, GA. Established 1854



TANKS



TOWERS



CYLINDERS



VESSELS

When inquiring check CP 2374 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Little temperature change in jacketed pipe lines

Jacketed pipe, fittings, valves, and pumps are described in 8-page, 2-color bulletin. Jackets maintain even temperatures in lines.

Pipe and fittings are cast iron, cast steel, or welded steel. Valves, which can be furnished for steam, air, or hydraulic operation, are available in either straight, 3-way cock, or globe type. Jacketed pumps have ratings to 300 gpm.

Sectional drawings and dimensions are included in Bulletin J-50, issued by Hetherington & Berner Inc., Dept. CP, 750 Kentucky Ave., Indianapolis 7, Ind. When inquiring specify CP 2375 on handy form, pages 2 and 3.

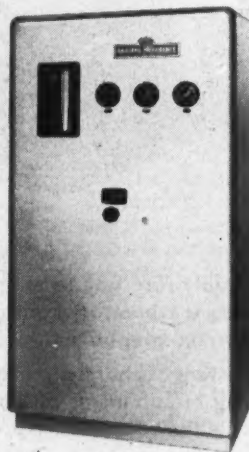
Meter, control chlorine gas feed to meet demand at any point of application . . .

control may be by manual, semi-automatic or automatic means

Uses: Meters and controls chlorine gas feed by manual, semi-automatic or automatic proportional means. Used in chemical processing and disinfection of industrial water supplies, in industrial waste treatment and in power plant applications for control of slimes in cooling water systems.

Features: Visible gas flow and automatic control to provide chlorine to three points of application.

Description: Automatic control will provide the proper feed rate to meet

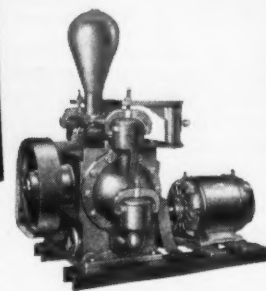


High capacity chlorinizer

chlorine demand at three individual points and will also select the sequence of point of application. This simplified apparatus insures that chlorine dosage at any point of application will be properly controlled and

Is It Rough—Is It Tough—Is It Terrible to Handle?

then let
**SHRIVER
DIAPHRAGM
PUMPS**
do it



Are the materials you must pump abrasive, corrosive, thick, heavy, viscous? Do they wear out or gum up your pumps, causing frequent shutdowns, breakdowns, replacements?

Then you need a Shriver Diaphragm Pump. It's positive acting, provides ample suction and pressure, simplifies and reduces cost of maintenance. Liquid-contacting parts made of any metal, rubber or plastic-coated.

Thousands in use prove their economy. Get Bulletin No. 126.

- Cost Less to Operate and Maintain
- No Wear on Working Parts
- No Leakage
- Easy to Clean

T. SHRIVER & COMPANY, Inc.

846 Hamilton St.

Harrison, N. J.

When inquiring check CP 2376 on handy form, pgs. 2-3

Now you can **SPRAY DRY** in laboratory or pilot plant quantities



The Swenson Research Spray Dryer provides instant drying at low temperature, with close control of moisture in the finished product. Ideal for use in developing new products and new processes. Write for Bul.D-106.

SWENSON EVAPORATOR CO.

Division of Whiting Corporation

15667 Lathrop Ave.

Harvey, Illinois

When inquiring check CP 2377 on handy form, pgs. 2-3

KEEP TROUBLES OUT ...
put

**Stainless Steel
FLOATS in**

COMMON float failures can cause costly repairs and shutdowns which cut down on the efficiency of plant operations. That's why it pays to specify stainless steel floats in order to get long, trouble-free service in all but extremely specialized applications where specific materials are required.

When you use Chicago's stainless floats, you're assured of the best floats available—floats that will pay big dividends in less maintenance and more continuous service. Specify Chicago's stainless floats and keep troubles out!

WRITE FOR FREE CATALOG

CHICAGO FLOAT WORKS, INC.

2340 So. Western Ave.
Chicago 8, Illinois

When inquiring check CP 2378 on handy form, pgs. 2-3

SAFETY EQUIPMENT FOR ALL INDUSTRIES

**IPCO
NITROFLEX
APRONS
AND
SLEEVES**

PROTECTION
AGAINST



Made of a new multi-purpose, clear, frosted plastic of proven superiority for protection against most acids, caustics, oils and solvents. Non-flammable. Light, flexible, comfortable. All seams electronically sealed.



Write for Bulletin A-1250

INDUSTRIAL PRODUCTS COMPANY

2814 N. FOURTH STREET • PHILADELPHIA 33, PA.

When inquiring check CP 2379 on handy form, pgs. 2-3

DECEMBER, 1950

PROCESSING EQUIPMENT

metered for any predetermined period at a suitable preselected rate to meet the chlorine demand at that point.

Source: Builders-Providence, Inc., Dept. CP, 345 Harris Ave., Providence 1, R. I. . . or for more information checked CP 2380 on handy form, pages 2 and 3.

Hot-gas welding forms leakproof polyethylene acid containers . . .

compact, safe receptacles give greater protection

Uses: For convenient storage and handling of strong acids, especially when moving them from storage rooms to departments where they will be mixed and used.

Features: Compactness of container plus tight, leakproof screw cap contributes to easy, safe handling. Jugs are filled through pouring spout to a level which prevents accidental spillage when carrying the container. These receptacles are described as being practically indestructible compared to containers of non-corrosive metals.

Description: A recently developed process known as the hot-gas welding method is used in fabricating these containers. This technique is limited



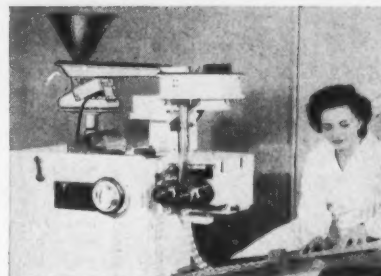
Gas-welded polyethylene containers to the use of certain types of plastics as well as to certain shapes.

Polyethylene bottles are made in pint, quart, 1/2 gal, 1 gal, and 3 gal sizes. Photo emphasizes the compactness of these containers. Bottles, jugs, and buckets are made of seamless polyethylene tubing with welded bottom, cover and spout.

Source: American Agile Corp., Plastics Div., Dept. CP, 5806 Hough Ave., Cleveland 3, Ohio . . . or for more information check CP 2381 on handy form, pages 2 and 3.

Shows mills and mixers

Roller mills, colloid mills, and mixers are presented in 8-page Catalog GP-50, issued by Troy Engine & Machine Company, Dept. CP, 4 Railroad Ave., Troy, Pa. When inquiring specify CP 2382 on handy form, pages 2 and 3.



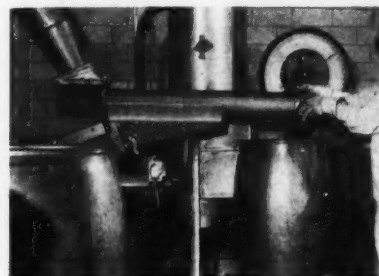
SYNTRON

"Vibra-Flow"

VIBRATORY FEEDERS

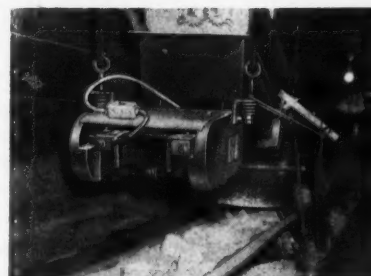
With Control of Flow

Finger-tip control of rate of flow makes these Feeders ideal for use with packaging machines and other automatic processing equipment.



Increase the capacity of bagging machines, ball mills, pan mills, crushers, grinders, blenders, mixers, screens, driers, etc.

Provide an even, smooth and controllable flow to belts . . . eliminating surges and spillage . . . eliminating periods when material comes short.



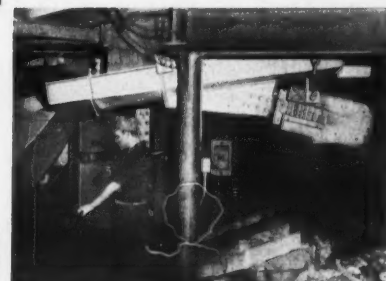
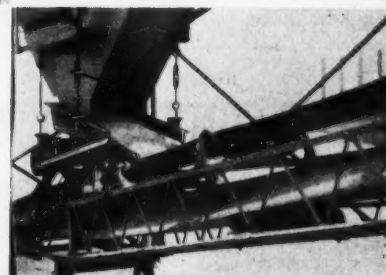
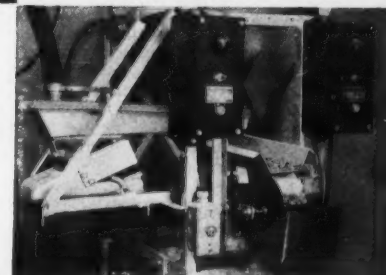
Will handle most bulk materials . . . hot, cold, wet, dry, fine, lumpy or abrasive. At variably controlled rates from pounds to hundreds of tons per hour.

Also available are Screening, Grizzly and Dewatering Feeders, Elevator and Spreader and Long Conveyor Feeders, Weigh Feeders, Batch Weigh Plants—many others.

Literature Upon Request

SYNTRON CO.

110 Lexington Ave. Homer City, Pa.



When inquiring check CP 2383 on handy form, pgs. 2-3

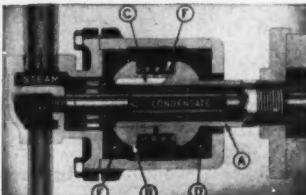
This packless stuffing box is packed with surprises!

Johnson Joints were designed as replacements for stuffing boxes. Other than that there's little resemblance. In contrast they are completely packless, self-lubricating, self-adjusting, and self-aligning. Almost every day industry is finding new ways to profit from their efficiency-boosting, maintenance-slashing operation—wherever steam or liquids must be admitted to rotating machine parts. Chances are good you've got an application for Johnson Joints.



WRITE FOR NEWLY
PUBLISHED
CATALOG

Nipple (A) is connected to roll or drum. Collar (B) is keyed to nipple at (C), but fits loosely so pressure can enter housing to act as sealing force. Seal ring (D) and bearing ring (E) are of carbon graphite—eliminate packing and oiling. Spring (F) is for initial seating only.




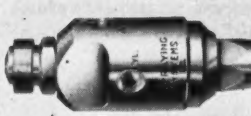

The JOHNSON CORPORATION 826 Wood Street
Three Rivers, Mich.



Johnson Rotary Pressure Joints

When inquiring check CP 2384 on handy form, pgs. 2-3

are you "up-to-date" on SPRAY
NOZZLE developments . . . for example

✓	Spraying Systems Pneumatic Atomizing Nozzle with Cleanout Needle . . . spring loaded cleanout needle is open in normal position. When pushed into orifice, cleans out entire orifice passage. Write for Data Sheet 4198.	
✓	Spraying Systems Pneumatic Atomizing Nozzle for Automatic Operation . . . provides intermittent operation. Typical use is automatic lubrication of molds . . . with lubricating operation indexed to press cycle. Write for Data Sheet 4547.	
✓	Spraying Systems Pneumatic Atomizing Nozzle with Steam Jacket . . . for spraying liquids requiring above-room temperature. The nozzle is easily removed from the jacket. Write for Data Sheet 4610.	

WRITE and tell us the details of what you want to accomplish in spraying . . . our engineering facilities are at your service. Also . . . do you have General Catalog No. 22?

SPRAYING SYSTEMS CO. 3216 RANDOLPH ST.,
BELLWOOD, ILLINOIS
(Suburb of Chicago)

When inquiring check CP 2385 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

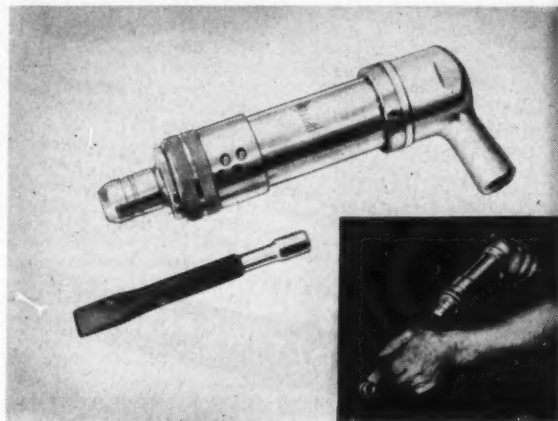
Triggerless air hammer has no 'kick' . . .

operates when pressed against work, stops when withdrawn

Uses: Pneumatic hammer for drilling, chipping, trimming, riveting, scaling, and other general applications.

Features: Hammer has no trigger or "kick". It operates when pressed against work, stops when withdrawn.

Description: Measures 9 1/2" overall and has 1" diam piston. Its weight is 5 lb. Operates on pressures from 30



Notice air hammer's lack of trigger

to 100 lb in accordance with work requirements. Force of blow can be adjusted from light taps to full power.

Source: Appton Super Hammer is made by Burgess Thomas Company, Dept. CP, Box 287, Bloomfield, N. J. . . . or for more information check CP 2387 on handy form, pages 2 and 3.

Grind valves of gas engines to fine, high precision finish with semi-automatic unit . . .

provides high speed production on automotive type valves; unit loads easily; lever controlled

Uses: For grinding faces of valves of gasoline engines.

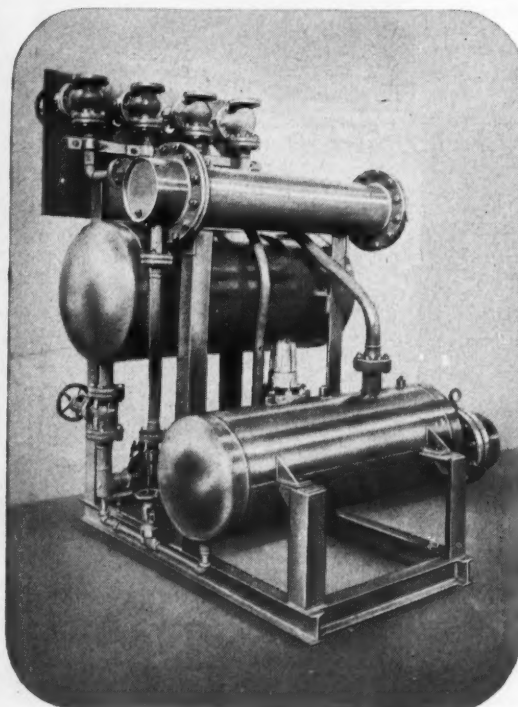
Features: For maximum operating ease and production, grinding cycle functions under semi-automatic control. Operating effort is confined principally to loading machine and to movement of a single control lever. An ultra-fine feed rate is obtained in the final automatic feed stage for assurance of a fine finish.

A simple adjustment provides for this fine feed becoming operative at any point in the wheel feed cycle from .005" oversize to zero. Spindle reciprocation is also a feature contributing to quality of finish and improved wheel cutting action.

Description: Grinds faces of gasoline engine valves having face angles of zero degrees through 62 1/2°, with face diameters of 7/16" through 3 1/2", and with stem diameters up to and including 3/4".

Movement of single lever clamps workpiece in the work head collet, and starts the grinding cycle, rotation of the workpiece, and coolant flow. Termination of the grinding cycle on completion of the grind is brought about automatically by an electric timer set for the particular time period necessary to obtain the size and

SELF-CONTAINED DOWTHERM HEATING AND COOLING SYSTEMS FOR THE PROCESS INDUSTRIES



Save time—save installation difficulties—get immediate operation and use. A Blaw-Knox compact, self-contained Dowtherm heating and cooling unit comes to you in one package ready to connect to water and power supplies without further assembling. Installation is quick—simple—inexpensive.

Blaw-Knox standard pre-engineered and pre-proved equipment for the Process Industries includes a long line of major devices. Learn about the others. See Blaw-Knox Bulletin No. 2355.

PROCESS EQUIPMENT DEPARTMENT
BLAW-KNOX

DIVISION OF BLAW-KNOX COMPANY

2090 FARMERS BANK BLDG., PITTSBURGH 22, PA.

Other Offices in Principal Cities

When inquiring check CP 2386 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

finish desired. Termination of workpiece rotation, coolant flow, and the unclamping of workpiece also occur automatically on completion of the cycle.

Spindle of work head unit carries a draw-type, hydraulically operated chuck for holding workpiece. A radially adjustable face plate provides for centralizing the workpiece in the chuck with respect to the center of the spindle, and end-stops control location of the ground surface relative to the wheel. Work head unit swivels through an arc of 67 degrees on a swivel plate having micrometric adjustment. This plate is mounted on a sliding table, and movement of the unit into grinding position, or movement of it away to provide clearance for wheel removal, is accomplished by a handwheel.

Wheel truing is done by means of a wheel guard truing device which eases and speeds this function. The device operates automatically and at the will of the operator through hydraulic power.

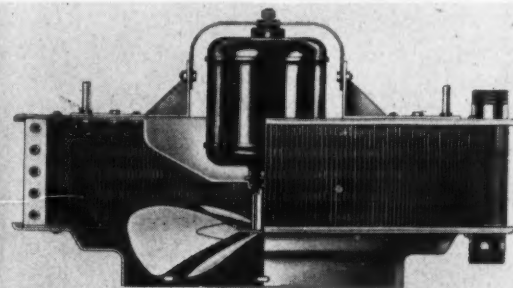
Source: Semi-automatic valve grinder is built by Norton Company, Dept. CP, 1 Bond St., Worcester, Mass. . . . or for more information check CP 2388 on handy form, pages 2 and 3.

Direct heat in many patterns from ceiling projection units to any location in plant . . .

units easy to maintain; deliver heat at low cost per 1,000 Btu; wide range of models

Uses: Various models cover requirements ranging from 53,300 Btu to 550,000 Btu.

Features: Overall dimensions remain same as in preceding models but an attractive offset roll has been added to the bottom to give added rigidity and improved appearance. Only the motor and housing brackets protrude beyond top of unit. A hydraulically expanded coil is used in these heaters. Model P projection heater has a companion diffuser. Called the "Louvre Cone Diffuser"; it has finger-



Motors easily removed from unit heaters

tip adjustment which makes it possible to send air in an almost infinite variety of patterns from the ceiling, where most of the units are located, to spot in plant where heat is especially required.

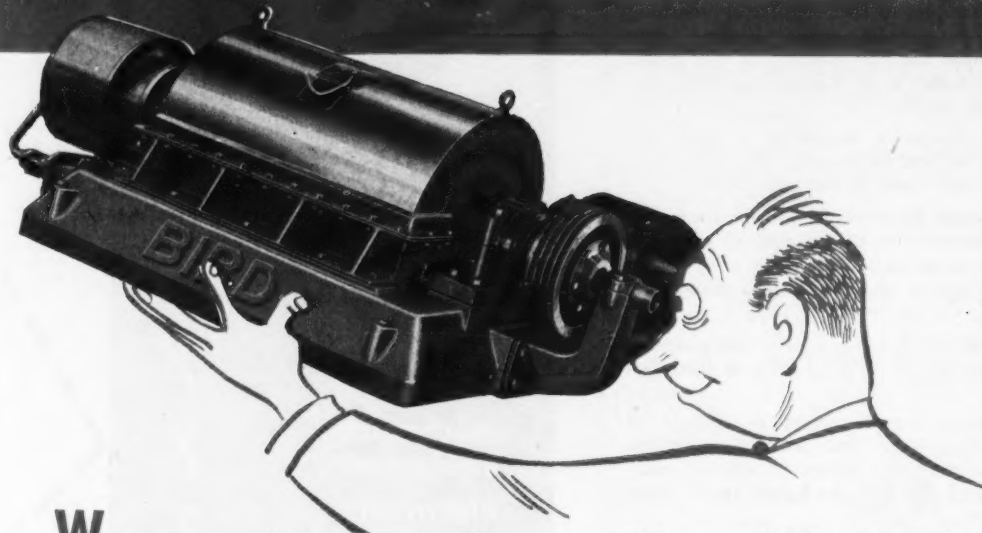
Description: Tubes are expanded under pressure of 3000 psi. It is possible to remove the motor either through the top of the unit or through the discharge orifice of larger models. Units are easy to clean and maintain.

Adjustable blades may be changed from 0-90°. Each blade gives full control of its segment of air.

Source: The Trane Co., Dept. CP, La Crosse, Wis. . . . or for more information check CP 2389 on handy form, pages 2 and 3.

DECEMBER, 1950

THIS IS THE WAY TO *Magnify* YOUR FILTRATION CAPACITY!



When demand skyrockets, filtration is all too often the bottleneck that prevents quickened output.

Bird Continuous Centrifugal Filtration generally provides the needed short cut to expanded production.

The Bird Filter separates the

solids — whether they be micron size particles or half inch lumps — from thick or thin slurries. It gets rid of batch operation and of slow, messy filter cloth fill ups and changes. It is quick, clean, continuous, economical — whatever the volume.



GET THE FACTS...FAST

The Bird Research and Development Center is completely equipped to develop authentic test findings on every solids-liquid separation problem — and do it without delay. Now is the time to make the most of these unique facilities. Get in touch with

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

When inquiring check CP 2390 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Liquid samples cooled to temps near those of incoming cooling media . . .

liquid sample cooler available in sizes accommodating $\frac{1}{4}$ or $\frac{1}{2}$ gallon per minute

Uses: Liquid sample cooler for cooling boiler and boiler feedwater samples; for cooling samples required for controlling chemical and refinery processes; and for general laboratory use. Two models are available, one with capacity of $\frac{1}{4}$ gpm, other with capacity of $\frac{1}{2}$ gpm.

Features: Counterflow principle makes possible the cooling of samples to temperatures approaching those of the incoming cooling media. In the $\frac{1}{4}$ gpm cooler for example, samples entering at 600°F and being cooled by water at 70°F attain outgoing temperatures of only 80°F.

Description: Cooler is essentially a shell and tubular coil type of heat exchanger. All connections are external to both cooling coil and jacket.

Welded construction makes cooler suitable for operation at pressures to 1500 psi on cooling coil side, and 150 psi on jacket side. Incoming sample temperatures may range to 600°F. Outside diameter of cooler is 3- $\frac{3}{8}$ "; overall length is 11 $\frac{1}{4}$ ".

Sample inlet and outlet are $\frac{1}{8}$ " IPS, while coolant inlet and outlet are $\frac{3}{8}$ " IPS. Cooler is furnished with mounting bracket.

Source: Liquid sample cooler is product of Worthington Pump and Machinery Corporation, Dept. CP, Harrison, New Jersey . . . or for more information check CP 2391 on handy form, pages 2 and 3.

Ready-to-install boilers are controlled by pushbuttons; use oil, gas or both . . .

continuous service; obtain high rate of heat transfer from gases with 2" generator tubes

Uses: Selection of sizes covers requirements ranging from 7,000 to 25,000 lb of steam per hour at 250 psi. Designed for continuous service. Units are suitable for outdoor use.

Features: Completely shop assembled, ready to place, hook-up and operate on arrival. Easily skidded or lifted into position. However, it can later be moved from one location to another, if required. Simple to operate with pushbutton start and stop and automatic control for handling variation of load.

Firing may be oil, gas or combination oil and gas. Changeover from one fuel to another is easily made. This permits taking advantage of most favorably priced fuels.

Description: Type FM is a water-tube boiler with completely water-cooled furnace. All controls are mounted on an enclosed cabinet adjacent to the front face of boiler and are within easy reach of attendant when standing in front of unit.

High rates of heat transfer from hot gases to the water in the boiler tubes are obtained through the use of 2" generating tubes. The rapid flow of heat through the tubes to the small column of water in each tube makes the boiler a notably fast steamer.

Sweet's File



process industries

processing equipment 1
mechanical equipment 2
electrical equipment 3
materials 4
structural equipment 5
plant utilities 6
service equipment, special services 7

1951

looking for
pipe?
valves?
controls?



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DIVISION OF
F. W. DODGE CORPORATION
119 WEST 40th STREET
NEW YORK 18, N. Y.

When inquiring check CP 2392 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

It comes on the line quickly, readily handles sudden load changes.

Setting of the boiler reduces heat loss by radiation because the walls, floor and roof are lined with high-temperature block insulation and a blanket of mineral wool. The overall wall construction provides economical face temperature and comfortable work surroundings.

Source: Type FM boilers are built by The Babcock & Wilcox Co., Dept. CP, 85 Liberty St., New York 6, N. Y. . . or for more information check CP 2393 on handy form, pages 2 and 3.

Greases, oils are applied to open gears, slide surfaces by spray valve . . .

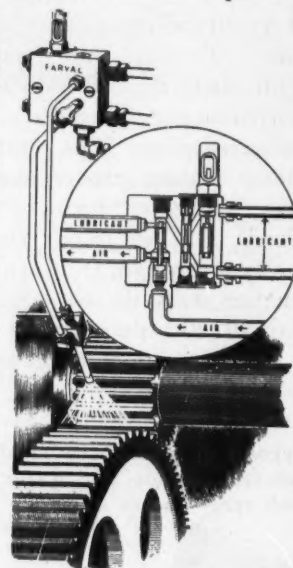
system applies desired amounts of lubricant at any desired intervals of time

Uses: Spray-lubrication of slide surfaces, open gearing, and other parts of equipment.

Features: System applies grease or oil onto any desired area, in any desired amount, and at any desired interval.

Description: The spray valve can be operated any place where compressed air is available for producing the spray of lubricant. The accompanying drawing reveals how the spray is applied.

Compressed air from a supply line is directed through the spray valve which meters air to the delivery nozzle just as the lubricant is metered. By a unique arrangement, the lubricant valve also turns on and shuts off the air. Thus, the quantity of air used is limited to the amount needed to spray each delivery of oil or grease, without exhausting or reducing pressure. Positive cut-off of lubricant by the valve after each delivery eliminates bleeding from the nozzle.



By selecting the proper sizes of lubricant lines from the pumping unit to the various spray valves in a system, a progressive spraying operation can be obtained that will not exhaust even a limited air supply. Bulletin No. 60 discusses the spray valve, and contains a number of diagrams which illustrate principle of operation.

Source: Development of The Farval Corporation, Dept. CP, 3251 E. 80th St., Cleveland 4, Ohio . . . or for more information check CP 2394 on handy form, pages 2 and 3.

STOP CORROSION LOSSES



● Avoid corrosion-caused "downtime." Protect vital equipment with easily applied Tygon Paint. Corrosion goes hungry in a Tygon-protected plant. This remarkable plastic coating, proven over more than ten years, forms a "live" plastic film so tough corrosion can't eat through. Helps cut maintenance costs to the bone, adds extra life to any equipment subject to corrosive fumes, condensates or spillage.

Tygon Paint resists acids, alkalis, oils, greases, alcohols and water. Apply with spray gun or brush.



● Write for your free copy of new Bulletin 711 and generous test sample.

U. S. STONEWARE

Allen & Co.

**RESISTS
ACIDS
ALKALIES**

**NON-
TOXIC**

**DRIES
QUICKLY
FLEXIBLE**

PROCESSING EQUIPMENT

Electricity used to heat air . . .

individual strip heaters are mounted in banks to form sections for mounting in air ducts

Uses: For electric heating of "extremely large" volumes of air flowing through ducts.

Features: Individual strip heaters are assembled in



Electric heater rated at 440 volts, 192 kilowatts

banks to form sections of specified sizes which are welded in 1 large frame.

Description: Heaters have monel sheaths and fins to prevent corrosion caused by moisture in air. All metal parts are primed and enameled. Provisions for thermal cutout and thermostatic controls can be made.

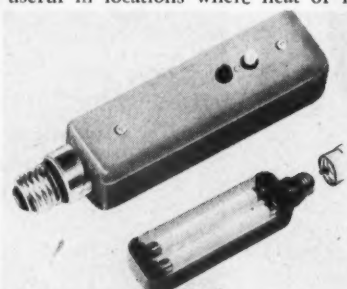
Source: Chromalox heaters are made by Edwin L. Wiegand Company, Dept. CP, 7500 Thomas Blvd., Pittsburgh 8, Pa. . . or for more information check CP 2396 on handy form, pages 2 and 3.

Screw fluorescent bulb unit into standard socket, get cool light . . .

unit provides 500 footcandles at 3 to 5", lasts the equivalent of 31½ years' normal usage

Uses: Unit for converting standard incandescent lighting fixtures into fluorescent illuminators. Has applications on machine, wall, bench, clamp, portable, desk, and similar fixtures. Especially useful in locations where heat of incandescent lights is annoying or dangerous to workers.

Features: Lamp is only slightly warmer than body temperature. It burns for an average of 7500 hours, the equivalent of 31½ years' normal use, and provides up to 500 footcandles at 3 to 5" range. Unit is glare-free, uses about 1/5 the power of incandescent lamps for same amount of illumination, and is sturdily built.



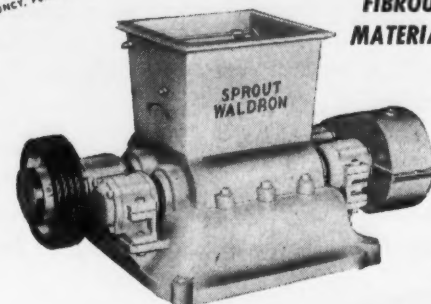
Two views of fluorescent unit

Description: Unit consists of 2 four-watt fluorescent



CRUSHERS

for SOFT · PRESSURE SENSITIVE
TOUGH · FRIABLE · CRYSTALLINE
FIBROUS
MATERIALS



Sprout-Waldron Crushers are used as preliminary units in a great variety of processing plants, particularly where the reduction from lump size to the final degree of fineness cannot be accomplished economically in a single operation. In addition to standard units, S/W Crushers are built to suit individual requirements. Write today for literature. Sprout-Waldron & Co., Inc., 10 Waldron St., Muncy, Penna.

Vertical Mixers, Attrition Mills, Rotary Feeders, Ribbon Type Mixers, Crushers, Knife Cutters, Continuous Mixers, Roller Mills, Separators, Pulleys

SPROUT-WALDRON

When inquiring check CP 2397 on handy form, pgs. 2-3

d-c power costs down 20%

A G-E RECTIFIER, installed at the Watervliet Arsenal in 1943, reduced maintenance cost \$500, and operating cost about \$3000 a year about a 20% reduction in annual d-c power costs!

Find out today how G-E power-rectifiers can help cut your d-c power costs. Write your nearest G-E Office, Apparatus Dept., General Electric Company, Schenectady, N. Y.

Mr. R. H. Hill, chief electrical engineer at the arsenal, inspects 400-kw G-E mercury arc rectifier.

GENERAL ELECTRIC

When inquiring check CP 2398 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

bulbs and all control components contained within a 2 x 6" shade. External surfaces are finished with light grey baked enamel; reflector is finished with high reflectance white baked enamel. Shade can be rotated through 330° to direct light where it is needed. Conversion is made by simply screwing unit into any standard lighting socket. Unit is available for 115 volt, 60 cycle; 220 volt, 50 or 60 cycle; or 110 volt direct current.

Source: Stocker and Yale, Dept. CP, Marblehead, Mass., manufactures Model 16-2E fluorescent converters. . . or for more information check CP 2399 on handy form, pages 2 and 3.

Saw concrete or asphalt for patch or production jobs at 12 fpm . . .

gasoline or electric powered saws also used on limestone, flint or granite aggregate

Uses: Sawing concrete floors to provide straight, smooth edges before breaking.

Features: Easily moved from job to job. Floating three-point suspension eliminates blade binding as saw is moved through rough surface. Positive feed, streamlined design contributes to easy handling.

Description: Offered in two gasoline driven models and two electric powered models. The first of these,



Electric powered saw cuts concrete to depth of 6 1/2"

Model C-75 has a 7 1/2 hp engine, the second is Power-Packed C-130 with a 13 hp 2 cylinder engine. Electric Models C-15 and C-20 are designed specifically for plumbing, electrical and maintenance applications. A unit identified as Model CHD permits present users of maker's Model HD masonry saws to convert them for concrete sawing.

Cutting speed of these saws is 12' per minute in asphalt, and up to 5' per minute — 1" deep — in limestone concrete. Maximum depth of cut is 6 1/2".

Source: Clipper Mfg. Co., Concrete Saw Div., Dept. CP, 2800 Warwick, Kansas City 8, Mo. When inquiring specify CP 2400 on handy form, pages 2 and 3.

Money Saving Steam Traps with the Strainers Built Right In . . . Now Available in Two Sizes

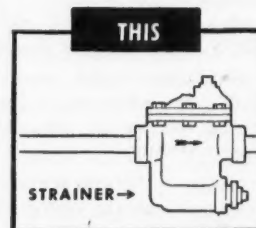
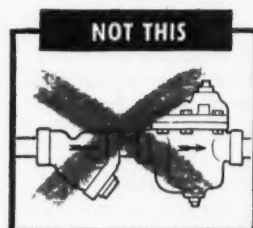
FIRST—THE ARMSTRONG No. 880
AND NOW—THE LARGER No. 881

VITAL STATISTICS



No. 880 No. 881

Pipe Connections	1/2" or 3/4"	1/2" or 3/4"
Operating Pressure	150 psig	250 psig
Capacity, lbs. per hour continuous discharge	450-690	760-1060
Height	5 5/8"	7 1/16"
Diameter	5"	5"
Weight	5 lbs.	6 lbs.



AN ECONOMICAL steam trap for draining small equipment naturally has a small discharge orifice. When dirt or scale conditions are bad it is recommended that a strainer be installed ahead of such a trap to avoid clogging.

Either the Armstrong No. 880 or No. 881 trap is a perfect answer for such a condition. In each the strainer is built right into the body, thereby eliminating a separate strainer, extra fittings and considerable installation labor. Best of all, these traps cost less than a standard trap plus a separate strainer. Look over your small trap applications and order the traps you need now from your local Armstrong representative's stock.

ARMSTRONG MACHINE WORKS
880 Maple Street • Three Rivers, Mich.

FOR COMPLETE DATA on correct selection and installation of steam traps for any service or any pressure, send for your copy of the 36-PAGE ARMSTRONG STEAM TRAP BOOK, or see our Catalog in Sweets or Chemical Engineering Catalog.

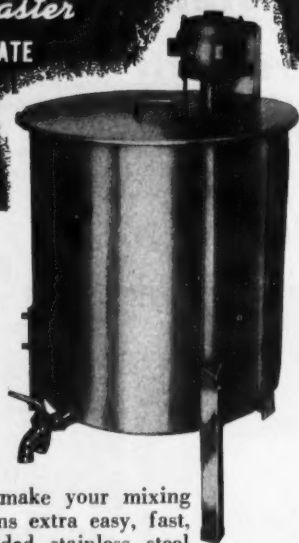


ARMSTRONG STEAM TRAPS

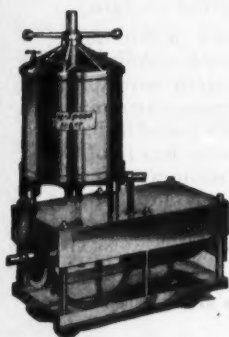
When inquiring check CP 2401 on handy form, pages 2-3

Save Time and Labor
with this Complete Mixing Unit
It's Easier-Faster
TO LOAD AND OPERATE

**For High Quality
Low-Cost
Processing**



Alsop Mixing Tanks make your mixing and blending operations extra easy, fast, efficient. The all-welded stainless steel construction, rounded corners, and the highly polished, crevice-free surfaces mean less time and labor in cleaning. The shorter legs make the whole Tank lower, easier-to-load and operate. For easier, faster mixing — for efficient, economical operation, specify Alsop Mixing and Storage Tanks — sizes from 5 to 300 gallons capacity.



Low-Cost Filtration

This Alsop "Sealed-Disc" Filter assures uniform, positive filtration at lowest cost. Its simplicity, portability and compactness mean convenience and speed in operation. Made in Stainless Steel, Brass and Bronze, etc., in a wide range of sizes and capacities.



Our new catalogue completely describes our Mixing and Storage Tanks, Filters, and Portable Mixers. Write to Alsop Engineering Corporation, 512 Alsop Square, Milldale, Conn.

ALSOP ENGINEERING CORP.
Filters, Filter Discs, Mixers,
Agitators, Pumps and Tanks

When inquiring check CP 2402 on handy form, pgs. 2-3

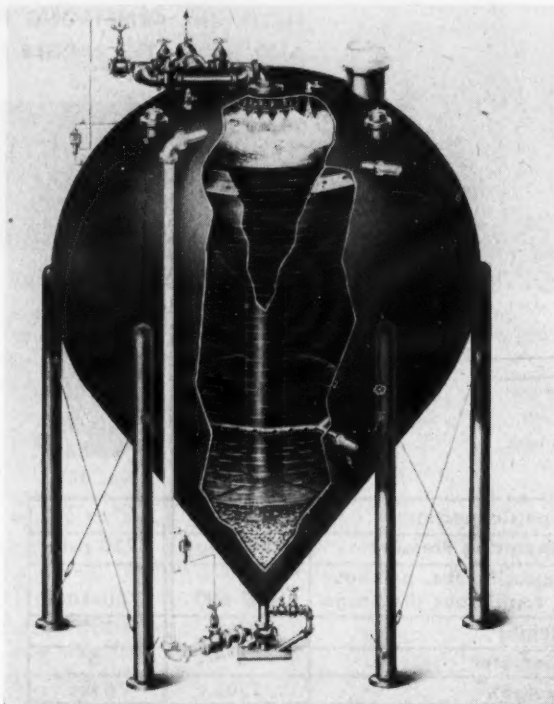
PROCESSING EQUIPMENT

**Tank's inverted cone design
efficient for sedimentation
in water softening . . .**

clarity of soft water effluent minimizes load on filters and filter media replacement

Uses: Design of these sedimentation tanks for hot process water softeners embodies strength to resist physical stresses without bulky construction and consequent high cost. Produces soft water with clarity that minimizes load on filters. Achieves low rising rates and largest possible settling area for treated water.

Features: As shown in illustration, design embodies a hemisphere mounted on top of a cone. Inverted cone provides uniformly increasing area from pointed tip to



Sediment tank design cuts bulk and weight

circular top which is necessary for correct functioning of tank, while the hemisphere provides the natural strength superiority inherent in its shape.

This combination makes most efficient use of materials and tank space while assuring uniform stress distribution because of the virtual elimination of knuckle radii and consequent stresses.

Description: Sphericone is offered for service in applications such as are customarily handled by cylindrical tanks. Raw water, steam, and chemical inlets, and spray heater, deaerator, and treated water collector are all mounted in the hemisphere, while the inverted cone contains the downtake, sludge bed, and rising zones of the water being treated. A number of these tanks are now in service, including a 600,000 lb/hr sedimentation tank for the world's largest hot-process hot zeolite water softening equipment.

Source: Sphericone is made by Graver Water Conditioning Co., Dept. CP, 216 West 14th St., New York 18, N. Y. . . or for more information check CP 2403 on handy form, pages 2 and 3.



want
your
power
to speed
up?

Do it easily—instantly—with fingertip control, while your machines are running!

want
your
power
to slow
down?

LOVEJOY Variable Speed Pulleys

Easily installed with old or new equipment. Simple speed-change made. Adjust to material conditions, production schedules without loss of time—without labor. Sizes fractional to 8 h.p. Ratios to 3:1 infinitely variable. Low cost. DELIVERIES FROM STOCK.

Send for complete catalog. Photos. Diagrams. Data.

LOVEJOY FLEXIBLE COUPLING CO.

Also Mfrs. Lovejoy Flexible Couplings and Lovejoy Universal Joints.
5072 W. Lake St., Chicago 44, Ill.
When inquiring check CP 2404 on handy form, pgs. 2-3



**Brass • Bronze
Stainless • Monel
Alloy Steels
BOLTS NUTS
STUDS**

Here's a full line of bolts, nuts and studs in all types of metals. Accurately threaded to assure a uniform Class 3 Fit, Pawtucket products are made in standard dimensions or to your specifications.

BETTER BOLTS SINCE 1882

Use Headed and Threaded Fasteners for Economy and Reliability



327 Pine Street - Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

When inquiring check CP 2405 on handy form, pgs. 2-3

Convention & Exhibit Schedule

1951

- Jan. 15-18. Plant Maintenance Show, Cleveland.
 Jan. 18-20. Seventh Annual National Technical Conference of the Society of Plastics Engineers, Inc., Hotel Statler, New York.
 Jan. 22-26. International Heating and Ventilating Exposition, Philadelphia.
 Feb. 28-Mar. 2. SPI Reinforced Plastics Division Meeting (6th Annual Technical Session), The Society of The Plastics Industry, Edgewater Beach Hotel, Chicago.
 Mar. 5-7. 1951 Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, William Penn Hotel, Pittsburgh.
 Mar. 11-14. American Institute of Chemical Engineers (Regional), White Sulphur Springs, Va.
 Mar. 13-16. National Association of Corrosion Engineers (Annual Conference and Exhibition), Hotel Statler, New York.
 April 3-6. 21st Annual Safety Convention & Exposition, Hotel Statler, New York.
 April 16-18. American Society of Lubrication Engineers, Bellevue Stratford Hotel, Philadelphia.
 April 30-May 4. Fourth National Materials Handling Exposition, International Amphitheatre, Chicago.
 May 13-16. American Institute of Chemical Engineers (Regional), Kansas City, Missouri.
 May 23-24. The American Society for Quality Control (Annual Convention), Cleveland.
 May 24-25. SPI Annual National Meeting, The Society of The Plastics Industry, Greenbrier Hotel, White Sulphur Springs, West Virginia.
 Sept. 10-14. Instrument Society of America, Coliseum, Houston, Texas.
 Sept. 16-19. American Institute of Chemical Engineers (Regional), Rochester, New York.
 Dec. 2-5. American Institute of Chemical Engineers (Annual), Atlantic City, N. J.

Resurfacing metal parts prevents corrosion

Four-page bulletin describes metallizing process for making mechanical repairs and protecting surfaces against wear, corrosion, and contamination. Contents consist exclusively of photographs and explanatory captions. "Metallizing" is issued by Metalweld, Inc., Dept. CP, 26th and Hunting Park Ave., Philadelphia 29, Pa. When inquiring specify CP 2406 on handy form, pages 2 and 3.

Single- and two-stage style ammonia compressors

Six-page bulletin offers information on single- and two-stage style ammonia compressors. Large, cutaway drawings clearly explain operating mechanisms and features. Compressor is also shown in typical installation. Text describes salient points: frame, crankshaft, bearings, connecting rods, crossheads, guides, lubrication, cylinders, pistons, valves, stuffing box, and motor.

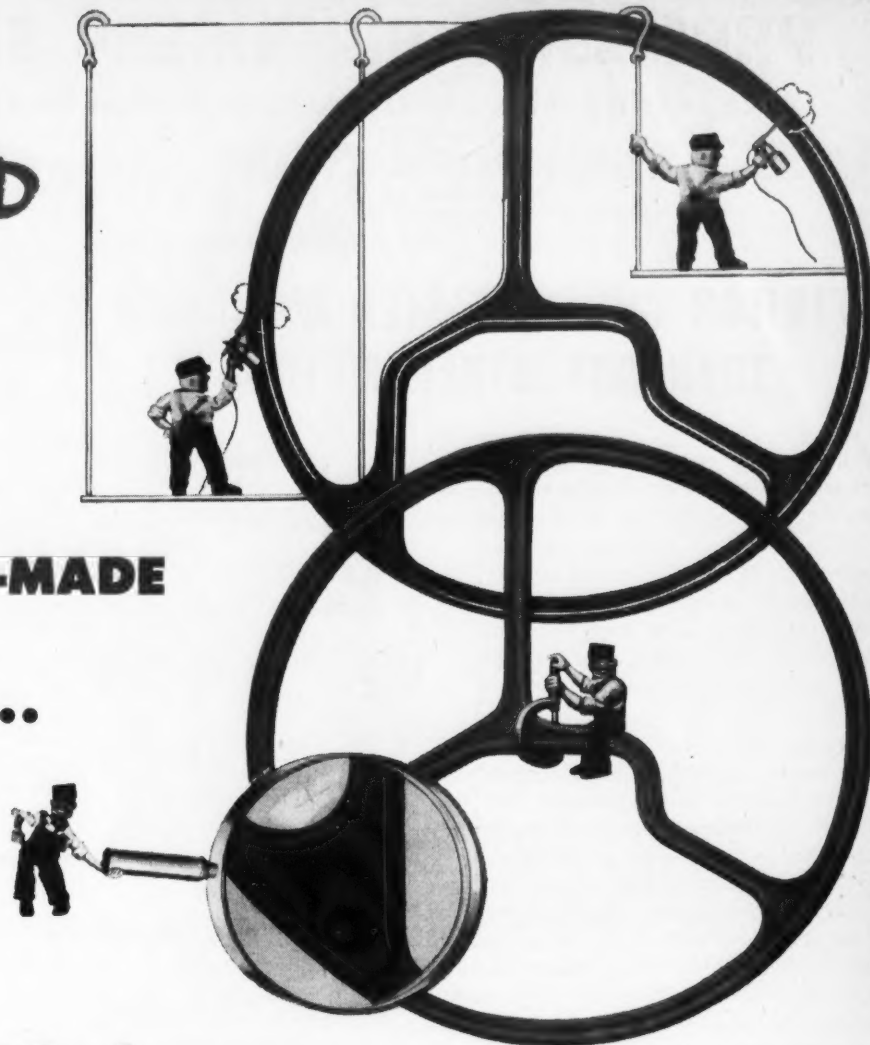
Bulletin C-1100-B36 is issued by Worthington Pump and Machinery Corporation, Dept. CP, Harrison, N. J. When inquiring specify CP 2407 on handy form, pages 2 and 3.

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to resist rust...

PRECISION-MADE

to resist blowouts...



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Gasket will stay on the job longer

The durable coating of red paint on every Goetze iron or steel-jacketed Style 923 Heat Exchanger Gasket is a sure "stop light" against rust. And rust, as every metal gasket user knows, is a primary cause of deterioration—both in the storehouse and on the job awaiting installation.

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Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING AND GASKET FOR EVERY SERVICE.

When inquiring check CP 2408 on handy form, pgs. 2-3

PROCESSING MACHINERY BULLETIN

Reporting News and Machine Design Developments

IN BUSINESS TO



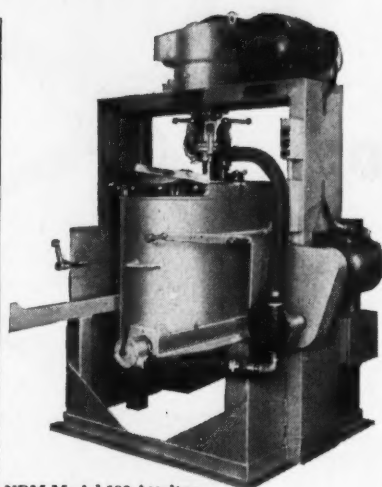
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NRM Model 100 Attritor

Szegvari Attritors are manufactured by NRM for Union Process Co., 120 Ash Street, Akron 8, Ohio.

ELECTRICALLY HEATED EXTRUDER PROVIDES POLYETHYLENE FILM IN ANY SIZE



NRM 72" Cooling, Haul-Off and Dual Wind-Up Stand for Flat Film

NRM Haul-Off and Wind-Up Units cool, trim and wind up polyethylene film at a rate of 250 to 300 pounds per hour . . . have a thickness range of .001" to .010" and maintain tolerances of plus or minus 5%. They are available in 48" and 72" sizes.

Haul-off and wind-up sections are powered by a 3/4 h.p. variable speed drive to suit the size of extruder used in connection with the machine. Dies for polyethylene film used with this take-up fit all sizes of extruders and are available complete with heaters and controls. Additional data is available. Write Plastics Machinery Division, National Rubber Machinery Company, Akron 8, Ohio.

NEW NRM TWO-STAGE EXTRUDER ELIMINATES INITIAL COMPOUNDING AND DRYING

Another NRM "first" to further simplify extruding operations . . . to save on production time . . . to cut your manufacturing costs. Once again the pioneer in its field, the new NRM Two-Stage Extruder introduces a new development for drying and extruding pre-blended wet acetate acrylic and polystyrene compounds to be pelletized direct at the die or in a chopper.

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Premium costs of specially mixed short orders are no longer necessary. Compounds can be quickly made from a simplified inventory of basic materials such as resins, plasticizers, stabilizers, fillers and dies.

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The first single screw extruder to incorporate colloidizing, devolatilizing and extruding, this new development is similar in design and operation to standard NRM plastic extruders. Existing NRM extruders now operating in the field can be modified to incorporate the many time and cost saving features of the new NRM Two-Stage machine. For complete details, simply write Plastics Machinery Division, National Rubber Machinery Company, Akron 8, Ohio.

Discussed in This Issue - - -

PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.



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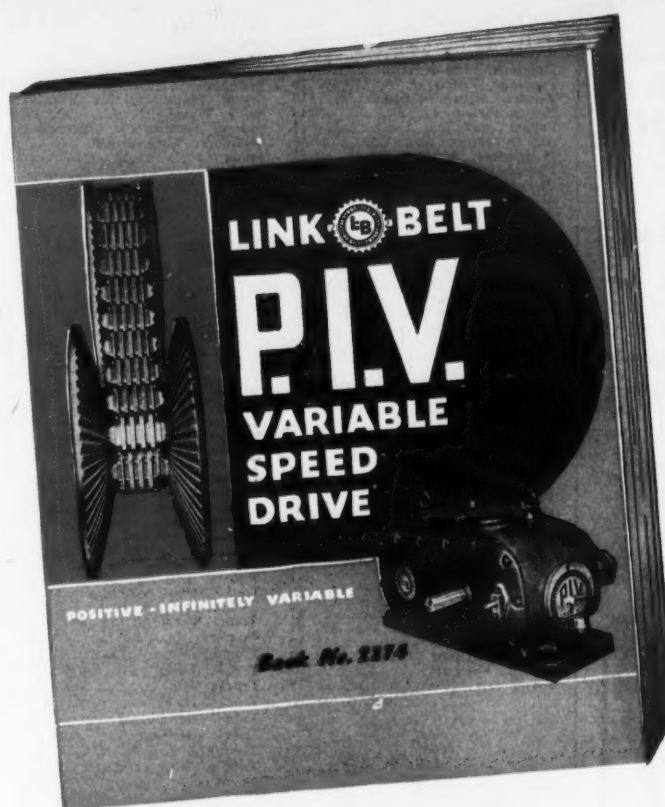
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Creative Engineering

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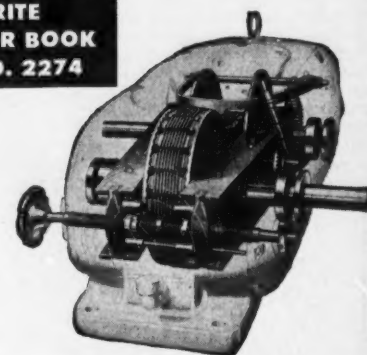
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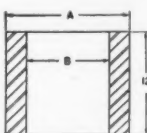
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LENAPE FORGED AND PIERCED RINGS Save Hours of Machining Time



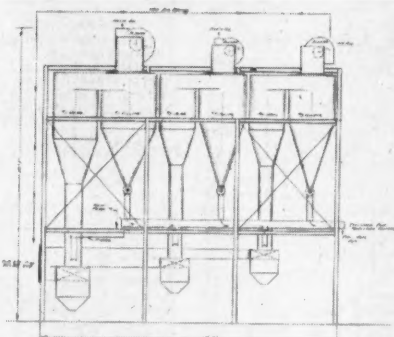
- Designers and fabricators are taking advantage of the inherent economy of Lenape pierced rings of the type illustrated — the OD and ID are press formed to rough dimensions in one operation, thus saving metal and hours of machine time compared to producing from bar stock.
- Use Lenape heavy rings at less overall cost!
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- Rings of this type are frequently used as auxiliary tank fittings, heavy machinery parts, as rollers, bearing sleeves, and stuffing boxes.
- Lenape forged and pierced rings are covered in detail on page 46 of Lenape Catalog 9-49. A copy will be sent upon request. Your specific inquiry will be given our immediate attention.

LENAPE HYDRAULIC PRESSING & FORGING CO.
DEPT. 100 WEST CHESTER, PA.

RED MAN PRODUCTS

When inquiring check CP 2412 on handy form, pgs. 2-3

AIR LIFT DRIER 3 STAGE UNIT



Illustrated above is a 25-ton low temperature pulp drier, for the manufacture of cattle feed in a large orange-processing plant. The patented low temperature air lift drier evaporates 40,000 lbs. of water per hour by a completely new process — fully retains proteins, carbohydrates and other nutritional values. There's an Air Lift Drier to solve any meal drying and de-odorizing problem.

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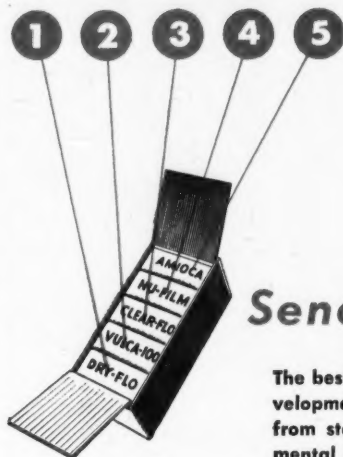
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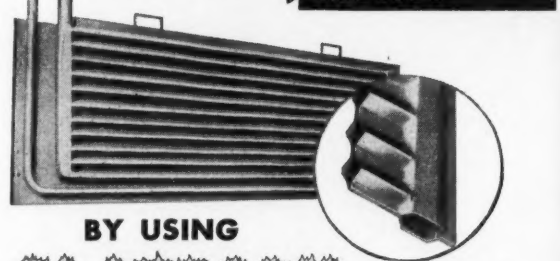
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Aluminum sheet and plate officially defined

Aluminum sheet and aluminum plate are not the same product. If efforts of the Sheet Division of the Aluminum Association are successful, those using either of the products will not be calling one by the other's name. Definitions were recently adopted as follows: plate is a solid section of aluminum rolled to a thickness of 0.250 inch and heavier. It is produced in rectangular form with either sheared or sawed edges. Sheet, on the other hand, is a solid section rolled to a thickness ranging between 0.006 and 0.249 inch inclusive. It is furnished with sheared, sawed or slit edges.

There are two forms in which sheet is furnished, according to definitions set forth by the Association. Flat sheet is furnished in rectangular form with sheared, split or sawed edges, which may be flattened by any standard method. The other type is coiled sheet which is furnished in rolls with slit edges. Heretofore, the terms "strip" and "coiled sheet" were applied to the same product but the new nomenclature makes official the use of the more descriptive term. (As reported in The Aloca News, Aluminum Company of America.)

Material handling courses

The Material Handling Institute, Inc., Pittsburgh 22, Pa., reported recently that in the fall twenty schools were teaching a full course in material handling. Also, twenty additional schools were teaching this subject as part of another course and were interested in developing full courses.

Mobile CO₂ generators

The first of a number of portable carbon dioxide generators to be built in conjunction with the Corps of Engineers, U. S. Army, was recently delivered by Girdler Corporation. It has a capacity of 300 lb of CO₂ per hour, and will operate efficiently in ambient temperatures ranging from minus 40°F to plus 130°F. CO₂ produced will be used in fire fighting, therapeutics, food preservation, and beverage carbonation. Unit is mounted in an enclosed and insulated trailer, and weighs 43,000 lb. Girdler Corporation has constructed a number of compact CO₂ generators for civilian use, and during the last war designed and built 27 portable units for military service. (The Girdler Corporation, Louisville, Ky.)

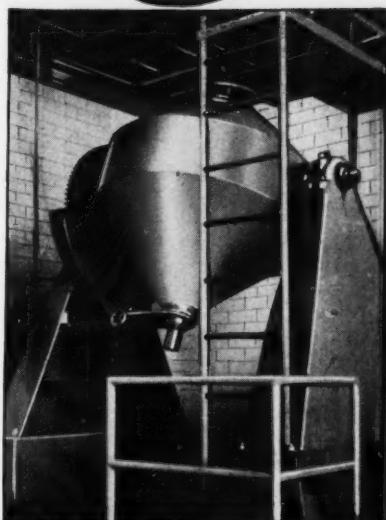
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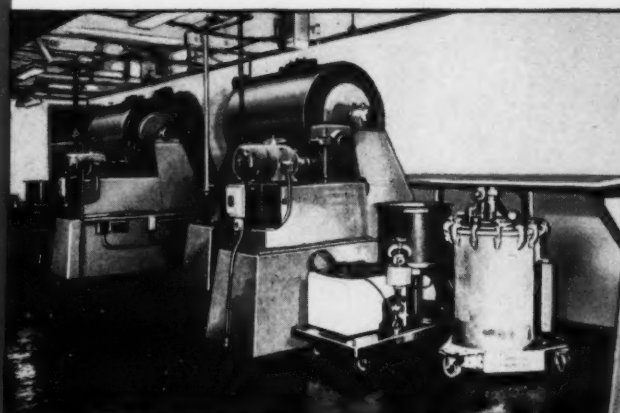
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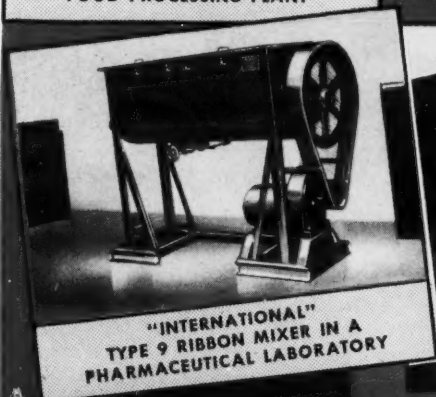
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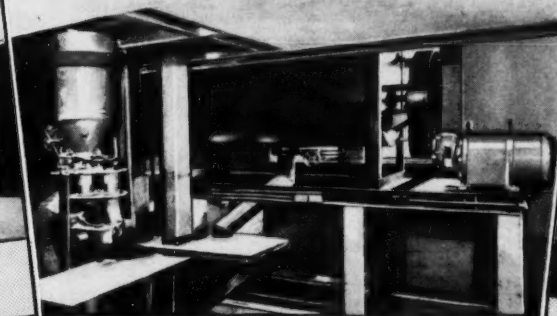
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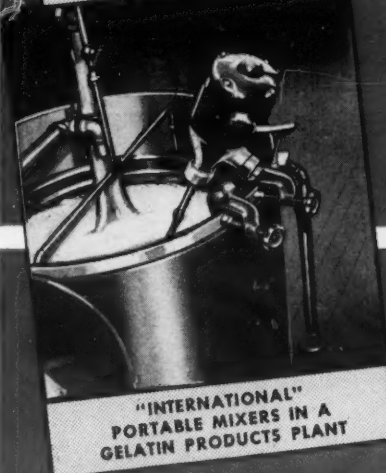
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*For information, prices and
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